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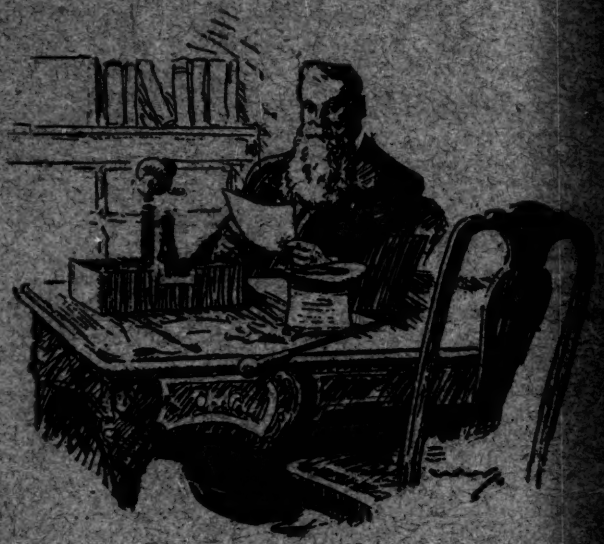

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THE LOUSE PROBLEM AT THE WESTERN FRONT.

BY

LANCE-SERGEANT A. D. PEACOCK, M.Sc.(DUNELM.), R.A.M.C.(T.F.);

FORMERLY ENTOMOLOGIST TO THE GOVERNMENT OF SOUTHERN NIGERIA; LECTURER IN ZOOLOGY, UNIVERSITY OF DURHAM.

THE insect dealt with in this paper is the clothes or body louse—*Pediculus humanus*, Linnaeus; order *Anoplura* or *Siphunculata*.

ENTOMOLOGICAL.

MORPHOLOGY.

Technique.—Microscopical preparations were made as follows:—the insects were chloroformed, fixed in formalin (10 per cent.) for a day, brought through the alcohols (50 per cent., 70 per cent., 90 per cent., absolute), cleared in xylol for a day or two, and mounted in Canada balsam. The drawings have been carefully prepared, and are as detailed and accurate as opportunity has permitted, but further work will, no doubt, reveal other features which may necessitate slight additions and modifications. The musculature and mouth parts, for instance, are not fully worked out.

The nomenclature of the parts may possibly need correction. As I am not aware of any other detailed drawings of this insect, it is hoped that these will be of utility.*

EXTERNAL CHARACTERS.

Only the most significant features are dealt with. The female is the larger, being about 4 mm. in length, while the male is about 3 mm. The proportion of the sexes is about equal. Soldiers speak of *black* and *grey* lice. With regard to the question whether these are different species, no distinctive features have been discovered which would necessitate separate classification. The black louse has a more dusky integument, the edges of the body are darkly pigmented and the dorsal regions of the segments darkly patched. Murray gives the information that the different coloured races of men have lice coloured to match. On the question whether the black variety exists peculiarly at the front, or more abundantly in proportion than in England, there is no evidence available. Eighteen hundred lice counted yielded 5.4 per cent. black. The bristles, of which there are two kinds, long and short, are placed all over the body, are somewhat sparse in number, and are roughly symmetrically arranged.

Head (see Figs. 3, 4, 5, and 6).

This bears the very simple sensory organs—the antennae and the black eyes. The entrance to the alimentary canal is at the anterior of the tubular chitinous mouth-part (5), which is nearly surrounded by a projecting sheath (1). This sheath rises from a thin chitinous diaphragm, which forms the greater portion of the anterior of the head. The dorsal margin overhangs and forms a blunt rostrum (2). Ventrally, are a pair of chitinous structures of unknown significance (3).

Thorax.

The three thoracic segments are fused and their boundaries are not sharply marked off. Mid-dorsally is an invagination. There are three pairs of strong legs which each end in sharp powerful grapnels and spines.

Abdomen.

There are eight segments, the two posterior being fused. Each of the first six bears a breathing hole, the stigma, on either side. The male is pointed at the posterior, and the sharp tip of the penis may often be seen extruded. The female's posterior is bilobed and ventrally shows a pair of tooth-like appendages, the gonopods, which assist in copulation. In both sexes the anal region is fringed with numerous bristles.

* For bench room and facilities to finish certain microscopical and recording work I wish to acknowledge the kindness of Captain McNee, R.A.M.C.

INTERNAL CHARACTERS.

Mouth-parts.

The interesting question of the homologies of the mouth-parts the writer desires to leave till a more appropriate season, and, in the absence of knowledge on this point, it would be best to use non-technical terms. The chitinous mouth-parts are (1) an outer structure adapted for sucking and for supporting the first pharynx; (2) two inner structures adapted for stabbing.

The strong outer apparatus is tubular for a certain length at the mouth end. When the insect is not feeding the entrance is lined with sharp chitinous teeth, seated in tissue and pointing inwards. When feeding the outer structure is thrust forward a little so that the mouth region projects beyond the protective sheath. This action, in some way, appears to relax the tissue bearing the teeth, and these, instead of lining the mouth, come to fringe it and point outwards. The first half of the outer structure, dorsally, is an arch which forms the roof of the beginning of the gullet. Backwards from the arch run two limbs to which are attached the protractor muscles which outthrust the structure. They also support the sides of the first pharynx. In the arch run two curved walls, which appear to have their origin just ventral to where the arch bifurcates, and in the floor of the pharynx. Within these two curved walls lie the anterior portions of the two stabbing organs.

The inner mouth-parts, the two stabbing organs, are lodged in a tubular sac lying below the oesophagus and extending from the back of the head to the first pharynx. They are similar in so far as both are flexible, long (nearly the length of the head), enter the first pharynx together, and bifurcate posteriorly. They vary in detail. The uppermost resembles a thin, broad chisel, double-grooved along part (?) of its length. The lower is like a gouge bit, the tip being three-pointed. Protractor and retractor muscles bring the apparatus in and out of action.

Alimentary Canal.

The writer does not fully understand the relationships of the various structures composing the canal anterior to the first pharynx. It would seem, however, when human blood is being in-sucked, that a gutter or tube is formed, having for sides the curved structures of the outer mouth parts and for a floor the posterior length of the broad stabbing organ. It is possible, too, that the under-stabbing organ becomes closely apposed to the upper, so forming a narrow tube leading to the wound.

Following the feeding tube is the first pharynx, which has muscular walls and is lined with chitin. Its function as a pump is secured by the action of five pairs of muscles, which diverge from it dorsally. The second and smaller pharynx resembles the first. It leads to a narrow gullet which opens into the stomach.

For information concerning the salivary glands the writer is indebted to Major Sydney Rowland, R.A.M.C. The glands are situated far back in the thorax and consist of two on each side, one bifurcated and one globular. The duct from the bifurcated gland joins with that of the accessory gland to form a single duct, and this opens into the sac of the stabbing organs.

The stomach is of very large capacity and, anteriorly, has two pockets. A short, narrow, single-looped intestine follows and leads to a slight swelling, the beginning of the rectum. Into the intestine open eight excretory Malpighian tubules. A short rectum ends at the anus.

Circulatory System.

This is probably typical, a long tubular heart lying in a pericardial space dorsal to the gut, with few vessels and large blood sinuses.

Respiratory System.

The lateral stigmata lead to the tracheae which branch to smaller vessels to ramify the tissues.

Nervous System.

The brain lies behind the second pharynx, above the gullet, and is connected by lateral commissures to a sub-oesophageal portion. Backward from the sub-oesophageal ganglia runs the ventral nerve cord. An optic nerve runs

from the brain to the eye. The antennae are sensory. Apart from these, there is a marked absence of any structures denoting special sense.

Reproductive System.

With the exception of the penis the reproductive organs of the male have not been noted. Of the female only the eight (?) ovaries have been noticed. They are long tubes containing ova at various stages of development.

INSECTS, ETC., RESEMBLING LICE.

Many insects, etc., found in dug-outs, at first and casual glance may be easily mistaken for lice. The *woodlouse* or *slater*, a crustacean related to the crabs and lobsters, is regarded as an ancestral or originative type of louse. *Springtails*, primitive insects which move by leaping, resemble lice when at rest. Certain small beetles may be taken for adult lice, and small mites, relatives of the spiders, look like young lice. These mites are very common in food which has been trodden into empty sandbags and the floors of dug outs.

HABITS OF LICE.

Habitat.

For shelter the louse depends upon the clothing, particularly the garments worn next the body, and prefers the comfort of the seams. Soldiers express a habit of the insect graphically when they say "It digs itself in," and, for this purpose, the beautiful musculature and the strong claws and spines of the legs are admirably adapted. The shirt is preferred, but in many cases most eggs are found at the fork of the trousers. This is because the trousers are worn consecutively for a much longer period than the shirt. In order of importance the areas most favoured for egg laying are the fork of the trousers and the armpits, the triangles at the tail of the shirt; next are the trousers and the shirt seams, and then the neck, but under present conditions there is general distribution also. Eggs have even been found in the beads of rosaries. It will be noticed that the insect accumulates where there is plenty of warmth, plenty of humidity and plenty of shelter.

The possibilities of infestation are instanced in a case examined at hospital. Apart from extreme lousiness of underclothing, the man actually had lice and eggs at the back of the neck of the tunic, the pocket seams inside the tunic, and the flap seams of the pockets. A walking distributing agent!

Alimentation.

The insect feeds by sucking human blood, and adult lice may suck for twenty minutes at one time. They feed voraciously and wastefully, their excreta often consisting of what appears to be undigested human blood. The peristalsis is violent, and the whole alimentary canal may move backwards and forwards while feeding is in progress. Young lice feed immediately on hatching. In consonance with Warburton's experiments, it was found that the young may be reared by feeding twice a day on the arm. They suck for any length of time between nine and twenty-two minutes, averaging twelve. If allowed to feed three times a day they do not suck so long at one time.

The process seems to be—the stabbing organs are outthrust, pierce deeply, and the sucking tube is anchored by the circumoral teeth to the skin; by means of muscular action on each pharynx the blood is drawn in; leakage into the sac of the stabbing organs is prevented by the upper stabber; the saliva pours into the sac, and, possibly viâ a tube formed by the upper and lower stabbers, reaches the wound and prevents the coagulation of blood; the blood is digested in the stomach and intestine; the waste products from the gut and Malpighian tubules pass through the rectum and anus.

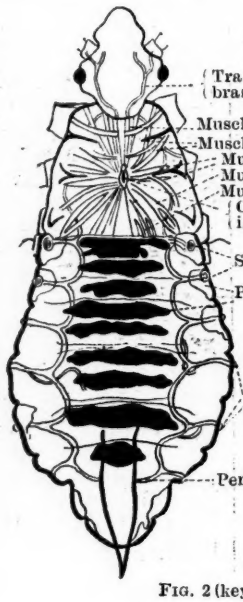


FIG. 2 (key to Fig. I).

Life-History.

Concerning this it has not been possible to conduct many experiments. In copulation the male lies below the female, the penis is extruded, up-curled, and is retained in position by the gonopods of the female.

The eggs are about 0.8 mm. long and 0.3 mm. in diameter, and, according to Warburton, one female lays five at one sitting, and may produce a total of 125. They are clear and glistening when new, but towards the time of hatching appear a yellowish-brown, due to the colour of the developing insect inside. The experimental method of incubation was as follows:—small pieces of shirt seam bearing undisturbed eggs were placed in calico bags; these were tightly fastened with string to prevent the escape of any newly-hatched young; the bags were slung next the body under the armpits and examined twice a day, morning and evening. The conditions, therefore, were almost natural.

One exact result is of importance. A fortunate chance gave six newly-laid eggs. One young hatched out in six days, three in about seven days, one in seven days and a half, and one in eight days.

A total of 291 eggs, of unknown age, taken *in situ* on eight pieces of shirt which had been discarded for about one day, yielded, after two days' incubation, the following:

1. A constant succession of hatchings each day of 9, 28, 33, 24, 10, 11, 20, 7, 72, 5.
2. Total percentage hatched—82 per cent.
3. The greatest number took at least ten days to hatch. (Perhaps the one day's separation of the shirt from the body inhibited development.)
4. Incubation may often take at least twelve days.

The attempts to rear the young in calico bags carried at the armpits and by freeing to feed twice a day were not very successful. The results differ in certain respects from those of Warburton. The first moult took place at various periods—for example, about two days in one case, after three days in one case, five days in one case, and seven days in one case. One specimen lived fifteen days and moulted twice, the first time on the fifth day and the second time on the seventh. It looked only half-grown at the end of the time which Warburton suggests to be the limit of growth. The conditions of the experiments were almost natural, and the heavy mortality of the young is rather baffling and disappointing. It may be that the young are especially susceptible to even the slightest confinement.

Vitality.

The duration of life on the body is not known. Warburton kept a mature female alive for thirty days. This would make the total length of life about seven to eight weeks. The duration is said to be dependent upon three factors:—abundance of food, the normal body temperature, and body emanations. Kept at 37° C. dry heat in a bacteriological incubator, lice die in about three days. Specimens were fed twice a day and kept on a piece of clean shirt in a cardboard cylinder. This was carried under the armpit, so ensuring body temperature without body moisture. The insects died in about five days. Body moisture, therefore, seems necessary to the insects, but what is the more essential, the humidity only or the chemical quality, is not known to the writer. To these factors it is proposed to add freedom. Even under the very slight restraints imposed during experiments the adult insects died quickly, that is, in two or three days.

As a result of many experiments it was found that *the longest period during which lice survived separation from*

the human body was nearly nine days. The following results were noted:

On an infested shirt, newly discarded and exposed to the open, during which the temperature varied between 40° F. and 45° F., two days being raw and wet, lice lived as long as five days.

On infested shirts, taken singly and stored in large army biscuit tins, or in brown paper parcels, they may live about seven days; on shirts stored in bulk, eight days.

Placed upon freshly won soil, they lived seven days. On a piece of shirt which was placed upon soil in a large biscuit tin they lived eight days. Dry soil to the depth of 2 in. was placed at the bottom of a box 2 ft. × 1½ ft. × 1½ ft., and covering the soil were laid pieces of wood, so imitating in miniature the conditions of a dug-out. A lousy shirt was placed in the box. The lice congregated upon the uppermost part of the shirt and remained there alive for eight days.

A constant feature is the moribund condition into which the insects sink after two days' separation from the body. This condition lasts till death. On taking a moribund louse, and placing it on the arm, there is evinced a quick response. The insect begins to take a distinct interest in life and shows it by perambulation and feeding. In connexion with this "warmth test" it is important to note that it may need to last quite five minutes at times.

With regard to vitality when subjected to various insecticides, the following results were noted:

Infested shirts dusted with a white mercury powder advertised as a vermicide, still held live lice at the end of four days. A similar test, using a powder of heavy oil residue (sulphonated), talc, and aloes, gave the result that the lice lived nearly nine days. The insects crawled regardlessly through both powders. Placed upon a small piece of shirt in a pill-box, the bottom of which was smeared with Vermijelli, they died in two hours, not having sense enough to keep away from the insecticide. They were killed by suffocation, their bodies becoming sticky with the preparation, and the stigmata choked. Similarly placed above N.C.I. powder they died in half an hour. A single infested shirt dusted with N.C.I. did not hold a live louse in ten hours. Shirts, each dusted with N.C.I. and stored in bundles of ten, each bundle being dusted above and below, did not contain live lice after three days. An infested shirt was immersed for half an hour in an emulsion of soapy water and crude paraffin oil (0.75 per cent. of emulsion being oil). The lice revived, and lived in pill-boxes for seven days.

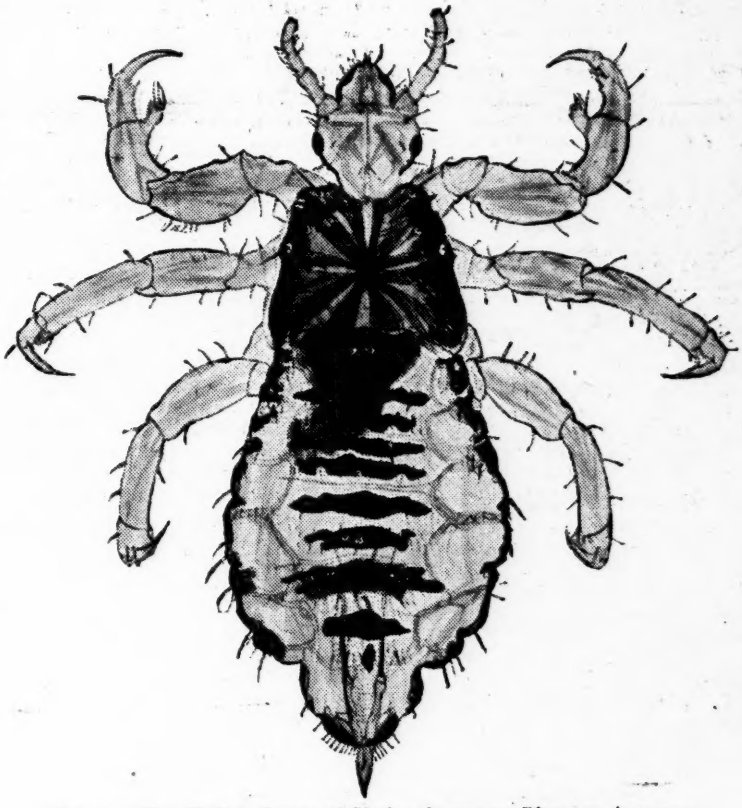


FIG. 1.—The Clothes Louse—*Pediculus humanus*, Linnaeus (synonym, *P. vestimenti*). Male; black variety; enlarged about sixty times. Drawing made from cleared specimen, viewed dorsally, and seen by transmitted light.

The maximum time during which eggs away from the body may remain dormant has been found by Warburton to be about forty days. This was under laboratory conditions in England, and the temperature fell at times below freezing point. Similar experiments were carried out here, shirts holding eggs being exposed to weather conditions. Samples taken from one shirt which had been exposed for eight days hatched after four or five days' incubation on the body. During the time of exposure the temperature fell twice to freezing point, and two days were raw and wet. Samples taken from a shirt exposed thirteen days did not hatch after twenty eight days' incubation.

In applying this knowledge the important fact is that eggs on the clothing, particularly the outer garments, if not treated regularly by ironing or disinfection, are a possible source of infestation for as long as a month after laying. Also, the removal of the clothing from the body for a few days in order to kill the eggs and lice by exposure, is not a practicable scheme.

The scanty existing information on the parasite's powers of endurance indicates them to be small. The examples cited, however, point to the conclusion that these powers are by no means inconsiderable.

The louse, therefore, is a parasite which is utterly dependent upon man's blood for sustenance and man's body and clothing for prolonged, prosperous longevity and reproduction.

INSTINCTS.

Migration.

To discover the capabilities of the louse with regard to its powers of locomotion and distribution the following simple experiments were made. On four occasions, for a period of at least one hour, the tracks of four lice were charted. The diagrams (Fig. 8) illustrate two typical results.

The distance between the two lice farthest apart was 9 ft., two covering a distance, measured in a straight line, of 5 ft. The routes pursued were decidedly devious and exploratory. There was no desire evinced to make for a recently discarded shirt, which was laid as bait 6 and 12 in. from the insects. These charts demonstrate how, under certain conditions, the louse may go far afield to find a local habitation and a means of livelihood. It has been observed that the insects may climb the wall of a room to a height of 3 ft.

A box was made into a miniature dug-out; twenty lice were placed in it, and watched with very short breaks for eight hours. The insects scattered quickly, roamed round, and twelve in all left the box within half an hour. The remainder were lost. In another case, in which straw was placed in the box, only two migrated after two hours. After twenty-four hours two were found on the straw and six on the boards. The remaining ten were lost.

Such migratory powers are most probably only fully exerted in times of stress. This is borne out by their curious habits of "congregating." Whenever lice upon discarded clothing were the subject of experiment most of them invariably made for the uppermost portion of the material, and showed no desire to forsake it. There is therefore a decided preference for warm material. On a shirt in a condition generally termed "walking" were computed 10,000 live lice. This would indicate gregarious habit and comfortable inertia and that competition is no incentive to migration. Experiment also shows that light is not the stimulus to congregating.

Lice certainly do wander from the host. Although no experiments have been performed with the definite aim of ascertaining the stimulus of wandering, five months' experience with the insects suggests, that if the

surroundings of the host be warm and comfortable, lice are tempted to wander about. Such conditions exist in a warm bed or when soldiers are packed closely together. The insect, though moving about, is in its native air all the time, and there is not the adventure of changing an environment. In such circumstances a bed may be infected through the louse not being fortunate enough to return to

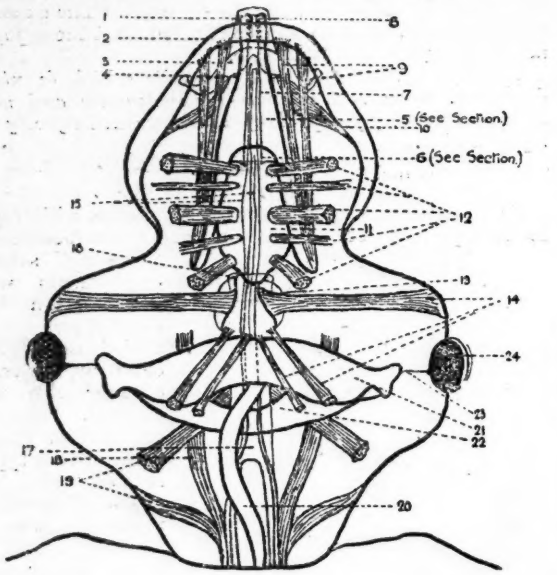


FIG. 3.

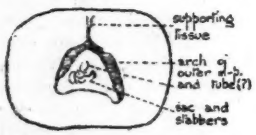


FIG 4.

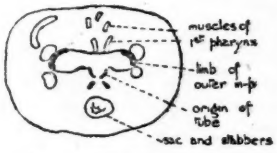


FIG. 5.

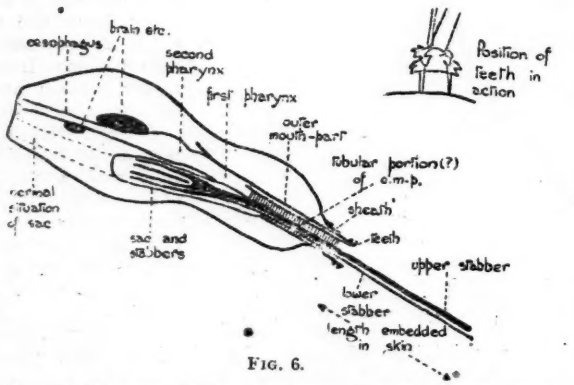


FIG. 6.

FIG. 3.—Diagram showing anatomy of head; dorsal aspect. Drawn from sections and cleared specimens; sections cut by Lieutenant J. Shaw Dunn, R.A.M.C. (1) Protective sheath—incomplete tube; (2) projecting anterior dorsal margin of head; (3) paired anterior ventral structures; (4) anterior ventral margin of head; (5) chitinous outer mouth-part, with (6) its tube running forward (7), and terminal teeth (8); (9) protractor muscles of outer mouth-part, and (10) retractor muscles (?); (11) first pharynx, and (12) muscles; (13) second pharynx, and (14) muscles; (15) the two structures of the inner mouth-parts, the dorsal being thin and broad, the ventral narrower and thicker, with three (?) terminal points; (16) ventral sac lodging the inner mouth-parts; (17) bifurcated posterior ends of inner mouth-parts; (18) protractor muscles (?) of sac; (19) retractor muscles (?) of sac; (20) oesophagus—dorsal; (21) supra-oesophageal brain, and (22) sub-oesophageal portion; (23) optic nerve; (24) eye.

FIG. 4.—Transverse section through head at region 5 of Fig. 3.

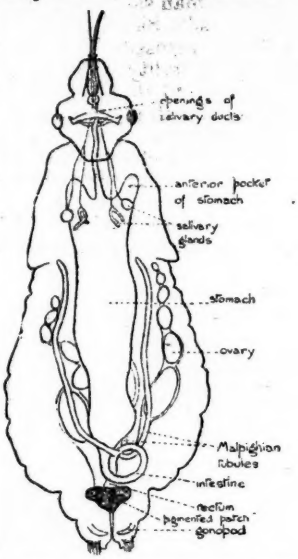
FIG. 5.—Transverse section through head at region 6 of Fig. 3.

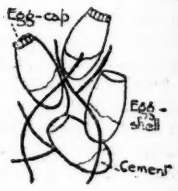
FIG. 6.—Diagram to illustrate mouth-parts in action.

the host before he leaves the bed, and other men, clean or otherwise, may become infected.

Selection and Preference.

Lice soon find the body if the host sleeps on any infected bedding. The discovery of the host may be due to three causes: (1) The warming of the bed giving the incentive to wandering; (2) contact of the lice and the body; (3) the insect "scenting" the host. Which is the most important factor is not known. A deliberate effort to reach the human body or recently discarded and sweat-impregnated clothing has never been observed. The instincts of detecting and pursuing the host seem, therefore, to be very feeble, if not absent.





Eggs.

FIG. 7.—Diagram showing internal anatomy of female; ventral aspect. Drawn from dissections and cleared specimens.

These instincts being at best so feeble it seems still more improbable that the parasite has any instinct of preference—that is, as popularly expressed, "choosing one person rather than another." Three types suffer most from lice—the person badly infested, the person with a very sensitive skin, and the person who has never been verminous before. The first type may be an unfortunate soldier, physically unclean through campaigner's luck, or may be a man of unclean habits, in both cases the parasites having every

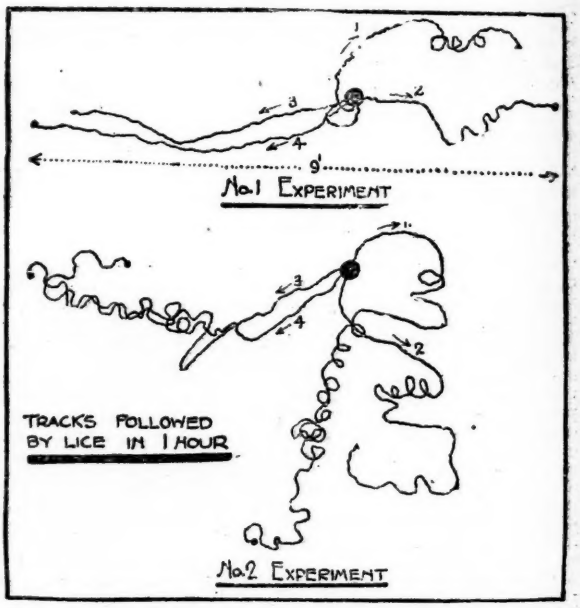


FIG. 8.—Tracks of lice; the breadth of the diagram represents 9 ft.

opportunity for success. In the other two types it is a matter of susceptibility to the touch and stab of the insects.

MEDICAL AND MILITARY SIGNIFICANCE.

Scratching, such as louse irritation induces, renders the skin prone to sepsis. "Louse rash," if it may be termed so, has been found distressingly common, and has frequently been mistaken for scabies.

Lousiness is felt mostly at night. This is in spite of

the fact that practically the same number of lice is present on the body during the day. Probably the distractions of the day keep the mind away from the pest, but at night, when everything is conducive to the desire for rest and comfort, the mind is most sensitive to the slightest irritation. Then the crawling of the insects, their sharp stabs, the itchiness of each tiny wound, and the fierce desire to scratch become intolerable. As one man said, "You feel as if you could rive yourself to pieces." Sleep, at best, is broken and uneasy, but is usually impossible. Consequent upon loss of sleep, impaired vitality and mental weariness become very real miseries to the soldier, the value of whom depends upon a high pitch of bodily well-being.

These are the soldier's most acute troubles, primarily due to lice at this front, but it must never be lost sight of that the menace of typhus, possibly more imminent at the Eastern fronts, is still present at the Western.

(To be continued.)

Notes on Military Orthopaedics.

III. THE SOLDIER'S FOOT AND THE TREATMENT OF COMMON DEFORMITIES OF THE FOOT.

BY

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(Continued from page 711.)

PART II.

CLAW-FOOT.

ONE of the surprises the military surgeon meets is the number of men with claw-feet who have been passed into the army; but still more surprising is the fact that many such cases have found their way to the front after the vigorous initial training which the recruit undergoes. Sooner or later, however, these men gravitate to hospital, and very few of them return to the ranks as efficients. A patient with this condition of the foot is quite unfit for military service, and should never be accepted as a recruit. The affection usually begins in early life, and is often not recognized until it has reached what I have termed its second stage; until then serious trouble hardly ever arises.

The etiology of "claw" or "hollow" foot is still uncertain. It is very often associated with a slight contraction of the Achilles tendon in childhood, and in some cases is due to a transitory paralysis of the extensor group of muscles. The short boot also stands in some causal relation to it. The whole question is, however, too vexed to be discussed here.

Clinically the condition presents five degrees or stages. The progress of the development of the deformity from one degree to another, though often continuous, is frequently arrested in one of the early stages; or perhaps the facts may be better stated by saying that progress from the first two stages to the later more severe stages is very slow, and sometimes does not take place.

1. *The First Degree of Claw-foot.*

The first degree occurs in childhood, and is easily overlooked. There is no visible increase in the height of the arch—in fact, the foot looks normal. The complaint made is that the child is clumsy, especially when running, and frequently stumbles or trips without obvious cause.

It will be found in such a case that the foot cannot be dorsiflexed beyond a right angle with the leg, and that there is commencing contraction of the Achilles tendon and the structures in the sole. The child's tendency to stumble is thus explained, for the fore part of his foot gets in his way as he tries to run.

The treatment in this stage is obviously to stretch the Achilles tendon and the plantar structures and so restore the power of dorsiflexion of the foot at the ankle. This can usually be effected by manipulation, after which the boot in which the patient walks should have no heel to it, but a bar half an inch thick placed transversely under the tread. In some cases it may be necessary to lengthen the Achilles tendon. This is best done subcutaneously by the following procedure (Fig. 1). The tenotome is entered on one side near the heel, and one-half only of the tendon is divided. The tenotome is next entered one and a half to two inches further up on the other side, and the other half of the tendon is divided. Now, by forcible dorsiflexion of the foot, the two halves of the tendon are made to slide on one another until the required lengthening is obtained. A rectangular splint is then applied so as to keep the Achilles tendon at rest in the corrected position and to maintain tension on the sole of the foot. This method is always preferable to the other method of complete division of the tendon at one level as the period of convalescence is shortened, and functional power in the calf muscles is more speedily restored.

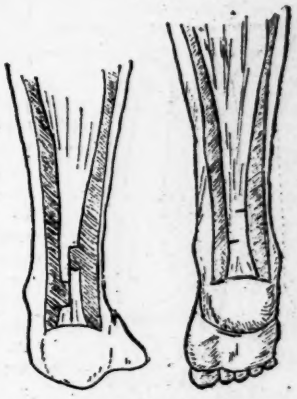

FIG. 1.—Anatomical diagram to illustrate the two stages of the operation for the lengthening of the Achilles tendon by subcutaneous tenotomy.

2. *Degree of Claw-foot.*

In the second degree there is definite contraction of the plantar fascia, and the characteristic deformity of the foot is easily observed (Fig. 2). The fore part of the foot is dropped—that is to say, there is flexion at the mid-tarsal joint or exaggeration of the arch of the foot. At the same time the great toe is dorsiflexed at the metatarso-phalangeal joint, and the tendon of the extensor proprius hallucis stands out prominently. Further, if the surgeon places his finger under the ball of the great toe he easily lifts it, and the toe automatically straightens out (Fig. 3). The other toes do not present a similar deformity at this stage, but the Achilles tendon is shortened. Even in this condition the patient may not complain of pain or disability; especially is this the case in the very young. In older folk, such as the recruit, complaints may begin whenever long marches are repeated. The men have to fall out because of pain and fatigue. They have frequently been suspected unjustly, for even at this stage there are no very obvious objective signs. The arch of the foot is not collapsed, but, on the contrary, slightly exaggerated. But if the surgeon makes a careful examination he will note tenderness beneath the metatarso-phalangeal range, and when the patient is asked to extend his toes the big toe responds to a disproportionate extent.

FIG. 2.—Claw-foot, second degree.

FIG. 3.—Claw-foot, second degree. The surgeon's finger easily replaces the dropped head of the metatarsal bone of the great toe; a case in this stage is suitable for tendon transplantation.

Treatment at this stage must be drastic. If the patient is to be rendered able to get about with ease and comfort, nothing less than operation will suffice. A radical attack may save the situation, and in a few weeks the soldier may return to duty. The operation consists in dividing and stretching the plantar fascia and then in making an incision over the tendon of the extensor of the great toe (extensor proprius hallucis), and the tendon is severed from its attachment. Two holes are drilled close to each other behind the metatarsal head, forming a tunnel through which the tendon is drawn by means of a catgut

ligature (Fig. 4). The tendon is then pulled so as to raise the dropped metatarsal head into position (Fig. 5), and its lower end is stitched to its upper part just above its entrance into the bone (Fig. 6). This completes the operation, but the foot must be firmly bandaged down to a metal sole plate with a thick roll of wool placed transversely just behind the heads of the metatarsals so as to flatten the arch as much as possible. The whole foot is then fixed in a shoe splint, which is bent to rather less than a right angle. After the stitches are taken out, the foot is put up in plaster-of-Paris in the fully corrected position, and the patient is allowed to walk in this for from three to six weeks. He should then for a few weeks wear boots with no heels, and a bar across the sole beneath the heads of the metatarsal bones so as to keep the foot dorsiflexed when walking.

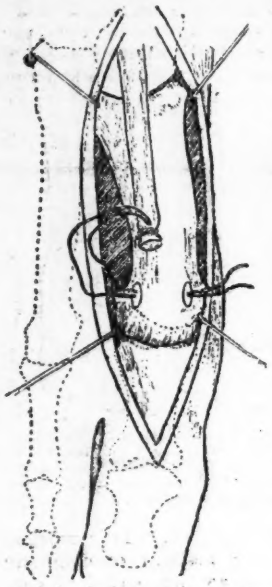

FIG. 4.—Claw-foot, second degree. Operation by transplantation of tendon of the extensor of the great toe. The diagram shows how the tendon of the extensor proprius hallucis is introduced through the tunnel above the head of the metatarsal bone.

3. *Degree of Claw-foot.*

In the third degree the characteristic deformity is more pronounced (Fig. 7); it is no longer possible with the finger to lift the head of the first metatarsal into normal line owing to the increased contraction of plantar structures; the operation just described for the second degree would therefore be useless. Further, the other toes also are now dorsiflexed, and the characteristic deformity which at first was visible only in the great toe is now shared by all the toes. The movements of the toes are limited, and they are beginning to become rigid in the position of deformity. Corns and callosities are formed across the ball of the foot owing to the increased pressure of body weight, for in this stage the patient can hardly get his heel to the ground at all. The Achilles tendon and plantar fascia are still more contracted than in the first two stages.

Operative treatment has now to be carried out in two stages.

A. The first stage includes division of the plantar fascia and severe wrenching to flatten the foot as far as possible, but as at this stage all the metatarsal bones are very obliquely placed it is necessary also to remove bone. The operation consists in removing through separate incisions on the dorsum of the foot a half to one inch from the shafts of the first, second, third, and fourth metatarsal bones toward the bases without opening the joints. The fifth metatarsal is retained intact, as it forms a useful splint for the rest of the bones. Removal of the head of the metatarsal should be avoided. The extensor and flexor tendons should be divided.

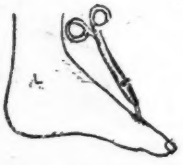

FIG. 5.—Claw-foot, second degree. Operation showing the tendon of the extensor proprius hallucis passed through the head of the metatarsal bone of the great toe and pulled before fixing.

B. As it is impossible to correct all the cavus deformity in this way, at a later stage the Achilles tendon is divided by the sliding operation, and the foot wrenched into dorsiflexion. The after-treatment and alteration in boots follow the same lines as those already prescribed.

4. *Fourth Degree of Claw-foot.*

In the fourth stage, in addition to all the deformities already described the foot acquires a well-marked varus deformity (Fig. 8). Callosities are even more tender, and walking is painful and difficult.

Treatment has to be still more drastic. After dividing and wrenching all tense structures so as to mould the foot towards the correct position, it will be necessary to divide also the flexor and extensor tendons, and then remove the astragalus. This releases the remaining tension on the sole, and the foot can be moulded into shape, so as eventually to carry body weight with comfort to the patient.

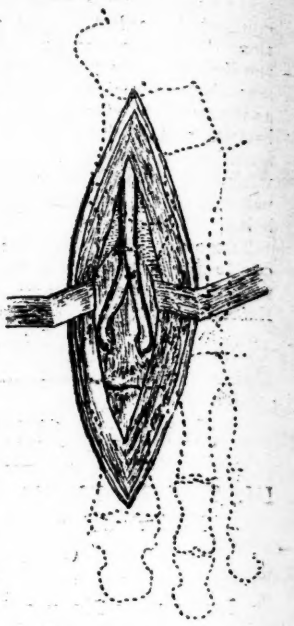

FIG. 6.—Claw-foot. Operation for second degree, showing how the tendon of the extensor proprius hallucis, after traversing the tunnel in the bone, is attached to itself and secured.

5. *Fifth Degree of Claw-foot.*

The last stage of claw-foot leaves the patient in a pitiable condition. The toes are blue and contracted, the callosities exquisitely tender. The deformity is that of equino-varus (Fig. 9). The patient longs for amputation. This should never be done, and I would recommend as a substitute an operation I have designed and practised with success on many occasions.

In such a case the astragalus should first be removed, and then a flap incision made along the base of the toes on the sole of the foot. A flap should also be raised from the dorsum of the foot, and the heads of the metatarsal bones exposed. The toes and the heads of the metatarsal bones are removed. The result of this operation is excellent (Figs. 10 and 11).

Although the various operative procedures I have described as necessary in the treatment of the later stages of "claw-foot" do not result in producing an efficient soldier, there is every reason that they should be known. The military surgeon has to consider the usefulness of citizens when the war is ended, and operations such as I have described, with appropriate variation, will be needed for many types of contracted feet following injuries received from the enemy.

FIG. 7.—Claw-foot, third degree.

FIG. 8.—Claw-foot, fourth degree.

FIG. 9.—Claw-foot, fifth degree.

FIG. 10.—Claw-foot, fifth degree. Front view after operation recommended in the text. The toes and the heads of the metatarsal bones, as well as the astragalus, have been removed.

FIG. 11.—Claw-foot, fifth degree. Side view after same operation.

HALLUX RIGIDUS, HALLUX VALGUS, AND METATARSALGIA.

The conditions known as hallux rigidus, hallux valgus, and metatarsalgia, or Morton's disease, are all frequently associated with flat-foot; they all have some features in common both as regards the nature of the pain experienced and the alterations required in the boot to relieve mild cases and to complete the after-treatment in cases which have required operation.

The Marching Boot.

Mobility of the Toe.

This is a convenient point at which to make a digression to discuss the importance of correct position and free mobility of the great toe in marching.

In young children of all races the great toe is directed slightly inwards towards the middle line of the body, in line with the anterior part of the inner longitudinal arch of the foot, to the structure of which attention was directed in the article on flat-foot published on May 20th (p. 709). In races who habitually go barefoot this position of the great toe is preserved in adult life. In civilized races—those, at least, who wear boots—the toes are often cramped into boots of unsuitable shape, so that the small muscles of the foot suffer atrophy from disuse, and the power to spread the great toe inwards in walking is much impaired. In a strong foot which has not been deformed by wearing pointed boots the great toe is spread inwards by the action of the abductor hallucis when balancing on one foot, when the weight of the body is on the fore part of the foot in walking, and still more so when carrying a pack on the shoulders.

Qualities of a Good Marching Boot.

A good marching boot should therefore leave the foot free to adapt itself to altering conditions of balance and strain.

First. The boot should fit comfortably and closely round the heel and ankle so as to avoid lifting of the heel in the boot, which results in chafing, ending in a blister of the heel.

Second. To save the arch from giving way and to avoid flat-foot the heel of the boot should be slightly higher on the inner side than on the outer. (See the article on flat-foot, p. 710.)

Third. The inner side of the boot should be straight right up to the tip of the big toe—that is to say, the inner sides of the two boots should be parallel to each other all the way along to the great toe. There should be no trace of pointedness, for pointedness tends to produce hallux valgus, and helps to cause flat-foot.

Fourth. The sole of the boot inside should be as broad as the foot with the weight of the body on it. In the case of a soldier it should be as broad as the foot is when carrying the weight of the soldier in full marching order—that is to say, the weight of the soldier himself, his pack, and all his accoutrements.

Fifth. The upper of the boot should not compress the fore part of the foot in any way. The toecap should be stiff and deep enough to clear the toes and allow free movement inside the boot. This stiffening should run back on the inner side of the boot to a point behind the metatarso-phalangeal joint of the great toe.

Sixth. The boot should be long enough to allow the foot to extend to its full length when the soldier is carrying his pack and all his accoutrements.

These last points, dealing with freedom of movement of the fore part of the foot, are essential to the full development of the small muscles of the foot on which the soldier's endurance and marching powers depend to so large an extent.

Corns do not develop in a foot encased in a boot which allows free play to the fore part of the foot. The regimental chiropodist is a most valuable asset, but his existence is, *ipso facto*, a confession that the fit of the men's boots is not all it might and ought to be. The man should not be allowed to judge of the tightness of his boot when his foot is cool. On the contrary, boots should be served out when men have come in from a long route march, and their feet are engorged with blood, and therefore at their largest. If this were done, interference with the circulation of the foot by the boot would less often occur. When a foot swells after a march, the swelling is practically all in the fore part, not round the heel. To serve out boots, therefore, after a route march would not prevent a man from choosing a pair which fitted properly round the heel and ankle.

The present army boot is a great improvement on the boot served out at the time of the South African war, but it is still lacking in two points—namely, the straight inner side and the clear free stiffened arch in the upper of the fore part.

Hallux Rigidus.

Hallux rigidus (Fig. 12) is a condition characterized by limitation of the power to dorsiflex the great toe at the metatarso-phalangeal joint.

FIG. 12.—Hallux rigidus.

If we remember that in straining on tip-toe or in stepping off with the foot in marching this joint must be dorsiflexed, it is evident that any limitation of the movement of dorsiflexion must, in the course of a long or hard march, result in straining the joint so that it becomes painful and inflamed.

As hallux rigidus and hallux valgus are both disorders of the same joint and are often intimately connected, the rigid toe may lead on to valgus deformity and a hallux valgus may become rigid. There is no essential difference in the pathological condition of the joint, but only in the direction of the deformity associated with it.

Treatment.

The treatment of hallux rigidus must be to restore the power of dorsiflexion of the great toe at the metatarso-phalangeal joint.

In the early stages, when the tenderness and inflammation either about the joint or in the joint has not resulted in osseous changes, palliative measures may still lead to recovery.

First the joint must be relieved of strain, so that the inflammation may be allayed. This can be brought about by arranging a bar like a football bar fully one-third of an inch thick and about an inch broad placed on the boot *behind* the head of the metatarsal bone. This causes the body weight to be borne on the neck of the metatarsal rather than on the tender joint, so assuring rest to the joint. As soon as the inflammatory tenderness becomes less the patient finds that the power to dorsiflex the toe begins to return. This is the moment to begin massage, movement, and hot and cold contrast bathing in order to hurry up the processes of repair.

In more advanced cases, and in cases resulting directly from trauma—as, for instance, dropping a weight on the joint or violently "stubbing" the toe, osseous changes due to formative periostitis occur round the joint. There may be lipping of the base of the phalanx, and usually some nodular thickening of the head of the metatarsal, especially in its upper aspect. This osseous outgrowth forms a mechanical block, preventing hyperextension. The impact of the bones on each other maintains the periostitis, and the condition gets progressively worse. Palliative measures may enable a civilian to go about his business with some degree of comfort, but he cannot do a day's shooting, and palliative measures are of no use for a man who must march.

Operation alone will remove the obstruction to movement and give permanent relief.

The operation follows exactly the lines to be described below for hallux valgus, and need not be described here.

Hallux Valgus.

Hallux valgus (Fig. 13) is a deformity of the first metatarso-phalangeal joint, the essential feature of which is that the great toe is deflected outwards, and in extreme cases may lie over or under the second toe.

One consequence of this position of deformity is that the head of the metatarsal and the base of the proximal phalanx form an undue angular prominence on the inner border of the foot. As a result of chafing and pressure by the boot a bursa, or bunion, forms over the thinned inner

part of the capsule of the joint. It may communicate with the synovial cavity.

The continued pressure and friction causes the skin over the bursa to become indurated and horny, and this greatly adds to the pain and discomfort suffered by the patient.

FIG. 13.—Hallux valgus.

Frequently suppurative inflammation occurs in the bursa (septic bursitis); this may be followed by septic cellulitis with inflammatory thickening of the tissues round the joint or, in cases in which the bursa communicates with the joint cavity, it may lead directly to septic arthritis.

It has been a surprise to many surgeons that soldiers have been able to go through their training and even to serve in France with pronounced hallux valgus deformity. The reason is that the disability is not due merely to the visible deformity but to the addition of the following three conditions:

1. Inflammation of the bursa (bunion).
2. Traumatic arthritis, of the same type as the arthritis in cases of hallux rigidus.
3. Tenderness due to pressure on digital nerves in every respect similar to the tenderness in a classical case of metatarsalgia or Morton's disease.

Of these three causes of disability bursitis is the most common; the dangers of septic bursitis communicating with the joint have already been noted.

Arthritis is much more rare, and is usually of the subacute type common in cases of hallux rigidus without the valgoid deformity. It is diagnosed by tenderness and pain on any movement of the joint, even gentle attempts at passive rotation of the toe.

The third variety, comparable to Morton's disease, is marked by acute pain on oblique pressure on the joint between the finger and thumb, and is due to excessive sensitiveness of the digital nerves and adjacent tissues outside the joint. It is not, as a rule, marked by any objective signs other than the valgoid deformity, and in cases of hallux rigidus of this variety there is no visible deformity—only tenderness on pressure on the joint.

It is difficult to make a sharp division between hallux rigidus and hallux valgus. The same types of pain and disability occur in both. It may, however, be said that with a distinct valgoid deformity it is comparatively rare to find rigidity, but that in cases of painful great toe without valgoid deformity—that is, in cases classed as hallux rigidus—arthritis and the resulting rigidity are much more common. Hence the difference in descriptive terminology—but to understand the conditions properly they should be taken together.

Treatment.

In mild cases palliative measures may suffice. First, the weight of the body should be taken off the joint by putting a bar—like a football bar—across the sole of the boot behind the head of the metatarsal. If the boots are specially made, this is worked into the thickness of the sole with a hollow in the sole for the great toe joint. The bar on the sole will, however, keep a man on his feet who would otherwise be disabled by pain in the great toe joint. The boot should, of course, be straight on the inner side, and the upper should spring clear up, leaving room for the large head of the first metatarsal—a feature unfortunately absent from the regulation boot. If the boots are roomy enough, a piece of felt with a hole in it to accommodate the bunion will afford relief.

Such measures, however, are only curative in the milder cases, and are not applicable to the man on service.

Operative Treatment.

Operative treatment of hallux valgus must not merely aim at correcting the deviation, but must also be directed to securing free dorsiflexion of the great toe, otherwise the patient will be left with all the disability of a hallux rigidus.

It follows, therefore, that, apart from the correction of the valgoid deformity, the operative procedure is practically the same in principle in both conditions, and one description suffices for both.

First let it be stated that there are two operations sometimes performed, which need only be mentioned to be condemned. The first is transplantation of the extensor proprius hallucis tendon to the inner side of the metatarsal head in the hope that it will correct the outward deviation. Experience has proved that this operation is generally useless; it is therefore a waste of time to perform it. The second operation—excision of the joint—cannot be too emphatically condemned, as it is liable to end in a stiff joint, bringing with it all the crippling disability of hallux rigidus in its worst form.

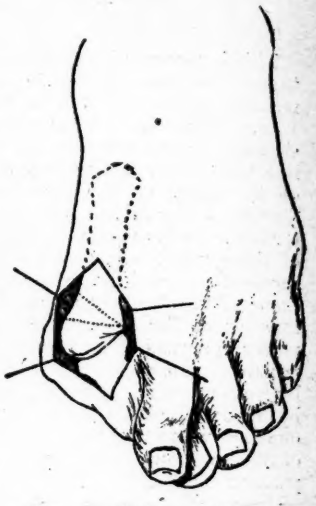

FIG. 14.—Hallux valgus. To illustrate osteotomy of the neck of the metatarsal bone, showing the wedge to be removed.

Finally, no operation should be performed while there is any inflammation of the bursa or surrounding tissues.

A. In early cases in which there is valgoid deformity but not much enlargement of the head of the metatarsal by bony outgrowths, osteotomy of the neck of the first metatarsal bone, either linear or cuneiform (Fig. 14), associated with tenotomy of the extensor proprius hallucis tendon will suffice.

B. In later stages, with bony excrescences round the joint, more free removal of bone and some form of pseudarthrosis must be performed to secure the free movement of the toe, which is essential to comfort.

1. Free exsection of the head of the first metatarsal bone, with interposition of a flap of tissue, or of part of the bursa, is not satisfactory in a soldier, though it has proved satisfactory in civilians who do not have hard walking or marching to do. The reason is that the lower part of the head of the bone is an important part of the weight-bearing apparatus, and must be preserved.

2. The operation to be preferred is resection of the head of the metatarsal bone (Fig. 15), leaving as much as possible of the lower part, taking care to clear away all bony excrescences which obstruct dorsiflexion or full correction of the valgus deformity. The bursal flap is then interposed as a covering for the raw surface of bone. At one time I used to interpose the whole bursal sac, but nearly twenty years ago several patients developed bursitis in the transposed bursa. The procedure I now adopt, therefore, is to open the bursa and interpose only one wall as a covering for the bone (Fig. 16), or obliterate the bursal cavity.

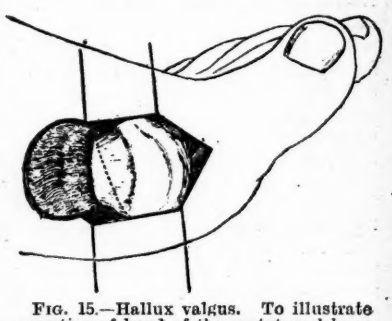

FIG. 15.—Hallux valgus. To illustrate resection of head of the metatarsal bone by oblique incision through the bone.

3. In some cases (more often in cases of hallux rigidus than in those of hallux valgus) it is possible to preserve the articular cartilage of the head of the metatarsal bone.

This may be done in two ways: The one method is to remove a wedge or slice from the posterior part of the head and then apply the cartilage to the raw surface of bone. The other is to cut a wedge of bone with the cartilage and mortice it into a cleft made in the bone further back, removing the intermediate bone.

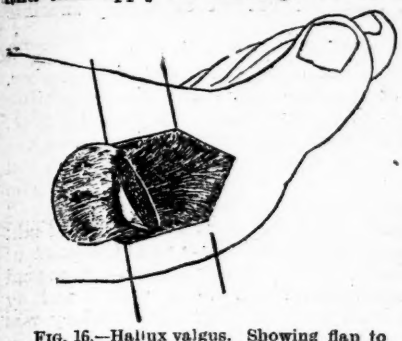

FIG. 16.—Hallux valgus. Showing flap to cover the end of the metatarsal bone in the operation illustrated in Fig. 15

In every case division of the extensor proprius hallucis is an essential part of the operation for hallux valgus, otherwise the traction of this muscle will tend to reproduce the deformity.

Technique of the Operation and After-Treatment.

The skin incision should be a linear incision along the inner side of the joint. The flap incision round the bursa described by Mayo has not proved entirely satisfactory in my experience.

The skin having been freed and retracted, a flap incision is made in the underlying tissues with a second knife. The knife used for the skin may be infected with *Staphylococcus albus* from the skin; it is therefore a wise precaution never to use the skin knife for any deeper dissection, especially in plastic operations where the least infection may destroy the value of the operation.

The joint is thus opened, and the head of the metatarsal freely exposed. The surgeon can then decide how much bone he is to remove and exactly how the wedge is to be made so that the toe will be correctly in line after the operation. He can also decide whether he can usefully retain the articular cartilage or is to dissect out a flap of the wall of the bursa to cover the raw bone.

It should be noted that the sesamoid bones should rarely be removed, as they seem to form an essential part of the tread of the ball of the great toe. The pad of fat between the sesamoid bones is, however, sometimes thickened, red, and tender; if so it may be clipped away.

The whole operation must be carefully carried out with the most scrupulous attention to three points:

1. Preservation of part of the lower or weight-bearing portion of the head.
2. Restoration of free dorsiflexion, or the soldier will not march freely.
3. Correction of the valgoid deformity in cases of hallux valgus.

The valgoid deformity is purposely placed last, for in a sense it is the least important from the point of view of restoring the man's marching power.

FIG. 17.—Splint for hallux valgus after operation.

A hallux valgus splint should be applied at the end of the operation. The splint I use is made of thin metal, as shown in Fig. 17. The hole in the splint fits over the inner side of the head of the metatarsal bone and prevents pressure from occurring at this prominent point. The base of the splint is strapped or bandaged to the inner side of the foot. The toe is then drawn inwards and secured to the narrow end of the splint, care being taken that the alignment is correct.

After-treatment in cases of hallux rigidus and hallux valgus is quite as important as the operation if we are to succeed in restoring function. Three weeks after the operation the patient may walk, provided he has a proper boot. Gradual exercise and the correct bearing of the body weight in a properly designed boot is an essential part of the treatment.

The boot, in the first instance, should be made of soft material with a stiff leather sole. On the sole is put a leather bar ½ in. thick and ¾ in. to 1 in. wide behind the heads of the metatarsal bones. The body weight thus falls for the time on the necks of the metatarsals rather than on the heads. Further, the heel should be made ½ in. higher on the inner side than on the outer side, in order to deviate body weight to the outer side of the foot and relieve strain on the inner side and great toe. This is, of course, also the appropriate treatment for the flat-foot so commonly associated both with hallux valgus and rigidus. The inner border of the boot must be straight, so as to allow the toe to be drawn inwards freely, so that no pressure of the boot will tend to reproduce the valgus deformity.

As a rule, patients shod in this way can walk at once with comfort. Later, an ordinary boot may be altered in the same way. The operation area is too tender to bear the pressure of leather for two or three weeks after operation.

It is while walking in these boots, with the body weight carried on the outer edge of the foot, that the real cure takes place. Under the normal physiological stimulus of walking repair is hastened, and the small muscles of the foot recover strength.

To let the patient get up in a slipper is absurd, for the weight falls then on the head of the metatarsal, and by irritating the new bone formed at the site of operation it sets up a fresh process of osteo-arthritis, which may leave him worse than he was before. The patient must therefore be strictly kept reclining, and *never* allowed to set foot to the ground till the time has come when he may be allowed to walk in a properly altered boot.

A CASE OF ARTERIO-VENOUS ANEURYSM OF THE SUBCLAVIAN ARTERY AND VEIN

TREATED BY EXCISION OF THE SAC AND THE SECOND AND THIRD PARTS OF THE ARTERY.

BY

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ARTERIO-VENOUS aneurysm of the subclavian artery and vein has been until this war an unusual condition, and records of its treatment by operation appear to be very rare, if not entirely wanting.

A private of the Cameron Highlanders was admitted to the Middlesex Clearing Hospital, Eastern Command, Clacton-on-Sea, on October 1st, 1915. He had been wounded in Flanders on September 26th, a rifle bullet striking him just outside the axillary border of the right scapula near its inferior angle, and emerging just above the middle of the right clavicle. The wound of entrance was healed and the wound of exit practically healed, but underlying it in the subclavian triangle was a pulsating swelling about the size of a double walnut. There was a very marked thrill, which could be felt and heard even as far as the bend of the elbow. The right arm was entirely paralysed.

A diagnosis of arterio-venous aneurysm of the third part of the subclavian artery and vein and injury to the brachial plexus was made, and as the swelling in the neck was steadily enlarging and the patient was painfully conscious of the loud thrill, it was decided to operate.

Operation.

An angular incision was made: its lower limb ran along the clavicle, while the upper followed the middle line of the sterno-mastoid muscle; a skin flap was turned up which included the wound of exit. The external jugular vein, which was greatly distended, was ligatured in two places and divided. The deep fascia was then incised, but in doing so the sac of the aneurysm, which lay immediately underneath, was opened and a great gush of blood followed. This was restrained by pressure with a finger while the clavicular fibres of the sterno-mastoid were divided.

An attempt was now made to reach the artery on the proximal side of the sac, but owing to the cramped space and infiltrated state of the tissues it failed, and a second

puncture was made in the sac, the outflow of blood from which was restrained by the pressure of a second finger.

The clavicle was resected between the costo-clavicular and the coraco-clavicular ligaments. The subclavian vein was then exposed at its junction with the internal jugular vein, and in the angle formed by that junction the first part of the subclavian artery was isolated and divided between two silk ligatures outside the origin of the thyroid axis.

By means of the outermost ligature (left long to act as a tractor) the distal portion of the artery was pulled forwards and outwards until the inner edge of the scalenus anticus was reached; the superior intercostal artery was divided in the process. The muscle being divided with scissors, the second portion of the artery was pulled up, and it became possible to insinuate the finger between the third part of the artery and the first rib, and raise it and the sac forwards.

One blade of a long artery forceps was thrust in behind the raised mass, along the upper edge of the subclavian vein, and the forceps being shut, the tissue was divided parallel with the blades.

The bleeding, which had been considerable in spite of the digital pressure exercised on the holes in the sac, now ceased, and it was possible to separate deliberately the sac from the lower cords of the brachial plexus. A ligature was then placed on the uppermost part of the axillary artery, and the mass of tissue, which consisted of the aneurysmal sac, and the third, second, and part of the first portions of the subclavian artery, was completely cut away. The forceps, which had been applied along the subclavian vein, and which controlled a small hole in its wall, was replaced by a lateral ligature.

All the bleeding now stopped; the exsected clavicle was wired into position, and the skin flap was sutured back after the exit wound had been excised. None of the cords of the brachial plexus appeared to have been divided by the bullet, but the patient's condition and the infiltrated state of the tissues precluded very thorough examination.

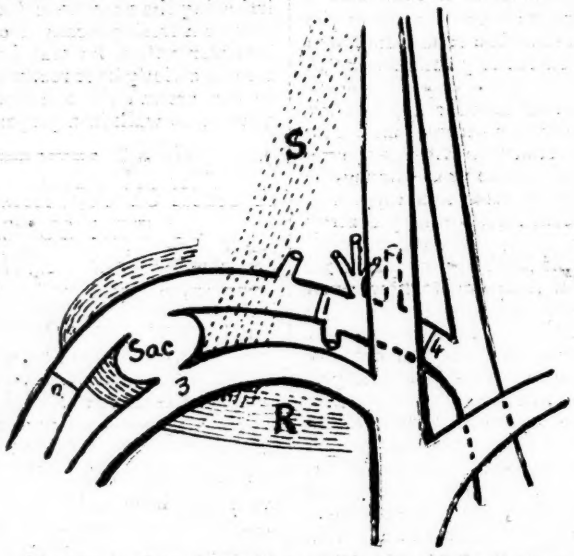

Diagram to show the position of the sac, and the ligatures S = Scalenus anticus. R = First rib. (1) Position of first ligature applied to the subclavian artery; (2) ligature on uppermost part of axillary artery; (3) lateral ligature on subclavian vein; (4) position of second ligature applied to the subclavian artery.

Dr. Beattie administered the anaesthetic most skilfully.

Description of Parts Removed.

The sac lay between the third part of the subclavian artery and vein, and communicated with both. The aperture into the vein was fortunately small, and was situated about the point where the external jugular joins it. The sac wall was very thin. Its front part was formed by the deep cervical fascia; behind and above it adhered to the brachial plexus, while the first rib and clavicle had limited it below.

After-History.

There was some shock, but although the pulse could not be felt either at the wrist or at the bend in the elbow, or in the line of the brachial artery, no gangrene or even discoloration of the arm occurred. Slight oedema of the upper arm appeared about a week after the operation, but subsided in a few days.

The result of the replacement of the exsected clavicle was not successful; suppuration occurred in the wound after the lapse of ten days, and the bone, failing to unite, had to be removed nearly a month later.

On the twelfth day fairly free bleeding from the wound took place; it was stopped by pressure. During November and December the patient had six further haemorrhages, the blood on each occasion flowing from a deep sinus that probably led down to the ligature on the end of the subclavian artery. The bleeding could always be stopped by pressure on the mouth of the sinus. The amount lost varied; on the fifth occasion it was so severe that the patient required intravenous saline infusion, and as a result of these losses of blood he became extremely anaemic and ill.

Re-ligature of Subclavian Artery.

The last haemorrhage occurred at the end of December, in the early hours of the morning. The case appearing desperate, one of us (V. B.) who was on duty at the time, determined to tie the innominate artery. An incision was made along the anterior edge of the sterno-mastoid, and from thence downward somewhat over the sternum. The lower portion of the common carotid was exposed and freed from its sheath, and, by means of a loop of silk passed under it, the vessel was pulled up until the point of origin of the subclavian artery was reached. A second loop was then passed under the latter vessel, and by making traction on both loops the innominate artery was brought fairly into view. It was then found that traction on the loop passed under the subclavian artery arrested the pulsation which till then had been visible at the site of the sinus. The innominate artery was therefore not tied, but a catgut ligature was placed on the subclavian about one-quarter of an inch from its origin from the innominate.

No ill results followed this operation, although the new wound suppurated slightly, nor was there any further bleeding from the sinus. A small amount of haemorrhage from the new wound took place some three weeks after the second operation, but there was reason to believe it was caused by the patient fingering the part.

Present Condition.—Both wounds are practically healed. No abnormal pulsation can be found in the neck, nor any pulsation at all in the arm, which is normal in warmth and colour. The arm, however, is still paralysed, though there is some return of power in the muscles of the shoulder and the flexors of the forearm. There is loss of sensation over that part of the hand supplied by the ulnar nerve.

PREVIOUS CASES.

Several cases of arterio-venous aneurysm of the subclavian have already been published during the present war, but none of these had been operated upon. From the South African war one case is recorded by Makins, the history of which is very interesting.[1]

Arterio-venous Aneurysm of the Subclavian.—This patient had a pulsatile swelling with a thrill which was considered to be an arterio-venous aneurysm of the right common carotid, just at its origin from the innominate artery.

No operation was performed, and the man was invalided out of the service. After a considerable period he improved sufficiently to be able to do light work, and although the swelling still remained, the thrill gradually disappeared.

Nine years afterwards he began to have cerebral attacks deemed to be due to small emboli originating in the aneurysm sac. Distal ligature of the common carotid was therefore performed, but the patient died during the operation. *Post-mortem* examination showed a large aneurysm of the subclavian artery. The communication with the vein had closed.

Traumatic Aneurysm of the Third Part of the Subclavian Artery.—A case of this condition, not, however, communicating with the vein, has been recorded lately.[2] Ligatures were placed on the first part of the artery and on the brachial artery, but the patient died of respiratory failure before the operation was concluded.

REMARKS ON THE CASE HERE RECORDED.

We decided to operate because (1) the sac was obviously enlarging, and (2) if the enlargement continued the difficulties of the operation would speedily have become so great as to make any such attempt useless.

A perusal of Makins's case—the only one in which the

after-history of an arterio-venous aneurysm in this situation is available—and the successful result we have attained appear to us to justify our decision.

We had to choose between, on the one hand, attempting to place a ligature on the artery on either side of the sac and, on the other, excising the whole sac and the involved portion of the artery. We chose the latter alternative because of the difficulty in isolating and ligaturing the artery sufficiently near to the sac (especially on the distal side, on account of the enormously dilated veins) to ensure against collateral channels re-establishing circulation into the sac.

If we ever have to perform the operation again we shall not replace the resected clavicle, for we think that if we had not done this the suppuration which determined the subsequent haemorrhages from the ligatured end of the artery might not have occurred. It would have been better not to have used silk for the main arterial ligatures. In military surgery, where asepsis of the wound can rarely with certainty be attained, catgut of an absorption rate of not more than twenty days should be used for large arteries, so as to minimize the duration of a ligature sinus if such occur, and which, so long as it exists, is a menace of haemorrhage.

In regard to ligature of the first part of the right subclavian artery, it is much easier, with an aneurysmal condition of the third part, to gain access to it inside the jugular vein and just outside its point of origin from the innominate, as was done at the second operation, than to secure it outside the jugular vein, as was done at the first operation.

At the bottom of the neck on the right side the jugular vein diverges outward from the carotid, leaving a small triangular space, crossing the base of which the subclavian artery will be found.

The upper end of the innominate artery and the root of the subclavian artery often lie well below the level of the manubrium sterni (they did in our case), but access to the latter can be attained by strong traction on the carotid and to the former by additional traction on the subclavian after this is found and isolated.

So resistant to trauma are large arteries that even strong traction on a considerable length of vessel stripped of its sheath and entirely isolated does not result in any harm.

REFERENCES.

[1] *Surgical Experiences in South Africa*, p. 142. [2] *British Journal of Surgery*, vol. iii, No. 10.

NOTES ON A CASE OF PENETRATING WOUND OF THE HEART.

BY

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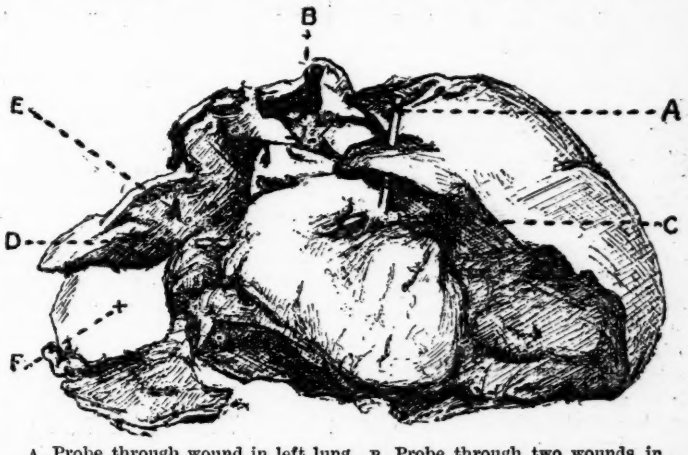
THE following case is the only example of a wound of the heart in a series of 123 wounds of the thorax and its walls which have passed through this casualty clearing station during the last ten months. The great majority of penetrating wounds of the lungs have progressed sufficiently well to be sent to the base, and it is a recognized fact that most of these cases ultimately recover. Probably nearly all cardiac wounds produce death from haemorrhage too quickly to allow of the patients being removed alive even to a short distance from the battle-field.

In the case recorded here the patient was wounded, whilst in the upright position, by a rifle grenade, at 12.15 a.m., on March 23rd, 1916. He was admitted to this hospital the same day at about 7 p.m., with a diagnosis of "gunshot wound of chest and right arm, compound fracture left elbow." His tally showed that he had had hypodermic injections of antitetanic serum (500 units) and of morphine (½ grain) at the field ambulance.



A, Probe through wound in left lung. B, Probe through two wounds in pericardium. C, Probe through entrance wound in right ventricle D, Probe through exit wound in right ventricle. E, Piece of metal in right lung. F, Wad of cotton-wool to evert margin of right lung to show piece of rifle grenade.

On admission, he was cold, suffering very severely from shock, short of breath, and cyanosed, but his lips were pale. Temperature 101° F., pulse 112, respiration 28. He was too ill for his wounds to be dressed then, but with brandy, salines, and hot-water bottles he improved sufficiently to have this done the following morning. His left arm, which was fractured, was transferred from a straight splint to a Thomas's, and the wound of his right arm, which was slight, was dressed. There was a small wound ½ in. to the inner side and ½ in. above the left nipple. A catheter was passed, and about a pint of normal urine drawn off. The patient was still very short of breath, and the dressing of his wounds was as much as his condition would permit of. At 2 p.m. the pallor increased, he became more cyanosed, and his breathing more difficult. His temperature rose to 102° F., pulse 130, respiration 45. At 6 p.m. morphine ¼ gr. was given hypodermically to relieve the distress caused by the shortness of breath. He was semi-conscious all the time he was in this hospital. He knew his name, regiment, and home address; but kept on trying to get out of bed, and was often delirious. He never complained of any pain either in the chest or arm, but suffered considerably from thirst. The heart sounds were normal. There were signs of fluid in both pleural cavities, more on the right than on the left side. There was neither cough nor expectoration. The cyanosis deepened, the pallor and dyspnoea increased, and he died at 11.45 a.m. on March 25th, having lived 59¼ hours after receiving the injury, and having during that time been conveyed from the regiment to the field ambulance, and from that unit to this clearing station.

Necropsy.

The body, which was examined four hours after death, before the onset of rigor mortis, was that of a well-built man of medium height and good muscular development. The skin was pale, but cyanosed, and there were no wounds other than the three already mentioned. The wounds of the left elbow and right arm were of no pathological interest, and could not have been factors of any importance in causing death. A small external wound, situated just above and internal to the left nipple, was traced transversely inwards for about two inches through the subcutaneous tissue and chest muscle; its subsequent course was through the sternum, leaving the internal mammary artery intact; then through the edge of the left lung, the pericardium, the right ventricle, and the pericardium; finally the missile was found imbedded in the right lung. It was not removed for examination, but its small size could be judged from an *x*-ray photograph.

The left pleural cavity contained a considerable quantity of blood, but the lung was of nearly the normal size; the right pleural cavity was almost full of blood, and the lung was found to be collapsed. The blood was fluid except for a single clot on the right side. The left lung had a slit-like wound of entrance, detected with difficulty, half an inch from the margin, at the inner and lower part of the anterior surface of the upper lobe, and a larger wound of exit through the margin of the inferior surface; about half an inch of the lung tissue had been passed through. There was a patch of recent fibrinous pleurisy between the upper and lower lobes, extending for about 2 in. on to the anterior surface of the lower lobe. On the under surface of the middle lobe of the right lung, about half an inch from the inner margin, a small piece of metal could be seen lying in the lung substance. There was no recent pleurisy, but the upper and middle lobes were almost completely fused by dense old adhesions.

Description of Cardiac Wounds.

The pericardium showed an entrance and an exit wound over the right ventricle. On opening the sac a small piece of khaki cloth was found, together with a small quantity of clotted and fluid blood. The pericardium presented the appearance of early pericarditis. The left ventricle was distended, but the right was partially collapsed, and near the centre of its anterior surface was a small circular wound of entrance which passed obliquely through the muscle to a wound of exit very near to the right border of the heart; an interval of an inch separated the two wounds, and round each was a small circular area of bruised tissue. The right ventricle was opened posteriorly and found to contain some very bright red blood clot. No wound was visible from the interior, and on passing a probe it was found that the wound passed through one of the lacunae between the pillars of cardiac muscle, having just penetrated the ventricular cavity.

The cause of death was severe haemorrhage, complicated with pulmonary collapse and interference with the heart's action. The enormous amount of blood in the pleural sacs came from the heart; the lung wounds were not capable of causing much haemorrhage. With each systole some blood would be forced through the small openings in the right ventricle into the pericardial sac, and from there blood would ooze through the pericardial openings into the pleurae. There was no attempt at closure of the openings by clot. Their small size accounts for the length of time the patient survived.

The occurrence of pericarditis and pleurisy (the latter being curiously localized) showed the beginning of an infective process.

The wounds of the left lung were no doubt closed by blood clot, while that of the right was kept open by the shrapnel on the surface causing collapse.

An *x*-ray photograph of the specimen was taken by Captain F. H. Gibson, R.A.M.C, and no foreign body other than the one described was found.

The specimen has been sent to the War Museum of the Royal College of Surgeons, London.

WHITE GANGRENE.

BY

MAJOR A. J. HULL, F.R.C.S., R.A.M.C.

IN addition to gas gangrene and gangrene due to direct interference with the blood supply, septic gunshot wounds may be attacked by a very acute infective process which is a form of gangrene. The condition appears to be an acute streptococcal infection, and is, in appearance, not unlike phlegmasia alba dolens, but is attended by the local circumstances associated with gangrene and the general effects of an acute toxaemia.

This form of gangrene has only been seen in the lower extremity.

The skin is glazed and white, moist, cold, and pits on firm pressure. A very firm oedema is present, and the distal pulse in the limb cannot be felt. The glazed white appearance of the distended skin, instead of the usual redness, seems particularly characteristic. Early in the condition the patient is extremely ill, with clammy, sweating face, and running pulse. The condition is extremely fatal, and death occurs in about twelve hours. The infection is so rapidly fatal that little change in the colour of the limb has been noticed. In those cases which have survived somewhat longer, it has been found that, during the last few hours, the limb has become mottled black and the discharge exceedingly foul. No gas has been noticed in the discharge, and no crackling has been detected in the tissues. The appearance is somewhat suggestive of deep-seated pus, owing to the tension of the skin, but, on making an incision into the limb, the wound merely oozes serum.

In the more severe and extensive forms the infection is so severe and the patient's condition so serious that no treatment appears practicable.

Amputation gives the only chance of recovery, and is successful when the infection is more localized, as happened in Case I.

White Gangrene of the Leg.

CASE I.—Pte. S., wounded March 9th with rifle grenade, dressed at field ambulance and transferred to base. Shell wound of left leg with comminuted fracture of upper third of tibia and fibula, and flesh wounds in the region of knee. Leg swollen and white, extending well up to thigh, and looking like phlegmasia alba dolens. Foot cold, and no pulsation to be felt in distal vessels of ankle; wound foul with sanious discharge; temperature 102°, pulse 124. Bacteriological examination showed streptococcus. Amputation through lower third of thigh; recovery (Lieutenant S.'s case).

CASE II.—Pte. L. was shot through the calf on September 24th and admitted to a base hospital on September 25th. There was a small wound of entrance and a wound of exit the size of half a crown, through which muscle bulged; the leg was white, the skin tense and cold. Incisions, 3 in. long, were made on each side through the bullet track, capillary bandages were inserted, and continuous saline irrigation applied. The next day the skin was much more swollen, it pitted on firm pressure, and had the appearance of a limb containing deep-seated pus but was white in colour. Very little pus came from the wounds; a thin, foul-smelling discharge exuded. The patient's temperature was 103°; he was restless, and his general condition was very much worse. Numerous incisions were made into the subcutaneous tissue. The patient's condition did not improve, the pulse became rapid, shock was very pronounced. The limb turned blotchy black and was extremely foul. The usual remedies were employed, including rectal saline injection. The patient died eight hours after the second operation.

CASE III.—Cpl. W., admitted to hospital suffering from a shell wound of thigh. There was a compound fracture of femur and severe destruction of the knee-joint. The wounds had been cleaned and dressed with cyanide gauze at a clearing station. About fifty-six hours after the injury the patient had a rigor. His temperature rose to 104° F.; vomiting and collapse occurred. The limb became cold and no pulse could be detected. The skin was white in colour, and a firm oedema rapidly occurred in the whole limb. No crackling was present, indicative of gas. The patient's condition did not admit of surgical interference, and he died twelve hours after the appearance of the gangrene. Bacteriological examination discovered streptococci in the blood and in the discharge from the wound.

SIMPLE AND INEXPENSIVE METHODS FOR FERMENTATION TESTS AND FOR OBTAINING CULTURES OF ANAËROBES.

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IN most bacteriological laboratories the work during the war has been very much increased, and with the increased cost of apparatus and media various devices have had to be employed to reduce expenditure. It may, therefore, be of interest to record two methods which I am using, and which are simple, inexpensive, and, at the same time, efficient.

1. *For Fermentation Tests.*

For these I use small test tubes, which can be made in the laboratory from ordinary glass tubing of ½ in. or ⅜ in. diameter. Introduce into these tubes about ½ c.cm. of any of the sugar media. These tubes, plugged and sterilized in the ordinary way, are inoculated with the organism whose reaction is to be tested, and then some sterilized vaseline, which has a melting point of about 55° C., poured into the tube. The vaseline solidifies and forms a plug, lying in contact with the fluid media. The tubes are then incubated in the ordinary way, and where gas is formed the vaseline plug is pushed up in the tube, and, if the media is cold when inoculated, there is sufficient absorbed oxygen to allow the free growth of the organism and to allow the reddening (the acid reaction) to show. In twenty-four hours, with the ordinary acid and gas-producing members of the typhoid-coli group, the reactions are very definite. Later, reduction takes place and the media becomes colourless, but if a hole is bored through the vaseline plug to allow ingress of air the red reaction reappears in a few minutes, starting at the upper part of the media and gradually spreading downwards. This method is simple and inexpensive, and it has the added advantage over the ordinary method that small quantities of gas, which may not be indicated by the ordinary Durham tube method, are always detected, the gas showing as small bubbles at the lower part of the vaseline plug. The method may be used for accurate estimation of the amount of gas produced by any given organism.

2. *For Anaërobic Cultures.*

Ordinary test tubes containing peptone broth or glucose peptone broth are used, and for the common anaërobes I find the peptone broth quite satisfactory. Melted sterilized vaseline is poured into the tube till it forms a

plug about ½ to ¾ in. long. The broth and vaseline are then boiled for twenty to thirty minutes, so as to expel any absorbed air, and allowed to cool. The vaseline solidifies very rapidly and forms a very effective plug. The tubes can be kept for any length of time and are perfectly airtight.

When they have to be inoculated, they are put in a water bath at about 55° C. in order to melt the vaseline, and the infective material is introduced into the broth by means of a sterile pipette. Immediately after the tube has been inoculated it is my practice (though I think in most cases this is unnecessary) to heat the vaseline over the Bunsen flame before putting in the incubator, in case of infection of the surface vaseline during inoculation.

I have used the method for the common anaërobes, and I have never failed to get a good growth in twenty-four hours. The method has the advantage over the ordinary anaërobic methods of simplicity and cheapness, and I really adopted it because of the increased cost of and the difficulty of obtaining the reagents which are usually employed in anaërobic culture. It has a further advantage that the development of even mere traces of gas can be detected. For examination of the culture, the plan I use is to puncture the vaseline with a thinly drawn-out pipette sealed at the lower end, and constricted about half an inch from the sealed end. By pushing the pipette against the bottom of the tube it easily breaks at the constriction, and any quantity of the fluid culture can be drawn up. After the pipette is withdrawn the vaseline is melted and the tube is again tightly sealed.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE CAUSE OF APPENDICITIS.

PROFESSOR SHATTOCK'S paper in the Section of Pathology in the Royal Society of Medicine, which treats of the mechanical causation of appendicitis (p. 690), is of special interest to me. Having had it myself, a few facts as to my experience may help those who are trying to find out the true cause. Towards the end of 1881, when in practice at Eccles, I began to suffer from insomnia. If I fell asleep when I went to bed I awoke about 4 o'clock next morning, and could not sleep again; whereas if I did not sleep on going to bed, it was about 4 o'clock before I slept. That fact points to a periodicity which ought not to be overlooked. I did not feel ill, and went about my work as usual until about the middle of December, when I went to my ancestral home in Scotland for a holiday, hoping to get rid of the insomnia. While there I was out all day, generally with the gun. I ate as usual and the bowels acted every morning, but I was conscious that there was some difference in the motion. It was a spluttering motion, from flatus passing with the faeces. After ten days I returned to Eccles on December 24th. Having had breakfast before starting, I might have had a sandwich on the journey, and when I got home I had an egg, a slice of white toast, a cup of tea, and went to see a patient who was very ill. Going to bed at my usual time I fell asleep, and awoke about 4 a.m. with pain in the left side of the abdomen. I took a dose of castor oil, and was sick, but had no motion. In three days, having been in bed all the time, appendicitis was diagnosed by the late Sir William Roberts, who advised me to keep to peptonized milk as food and to have morphine to relieve pain. I had general peritonitis, and for twelve months afterwards could feel a lump, the size of a hen's egg, just inside the superior crest of the ilium, where, according to my observation, and not at McBurney's spot, the appendix lies. Having been about three weeks in bed I went to Scotland to recruit. I was astonished to find that my memory, which was very good before that illness, had failed. I have never had another attack, but ever since have had to be careful as to diet, and was induced to study the physiological action of foods for my own sake. As a result I published what I called *A Doctor's Discovery*, which, although not new, was quite original on my part; and there I think I prove that food is the chief cause of disease. Having got rid of all unnecessary fat I can feel my caecum, and, watching the effect of food on it, I find that vegetables make it large and flabby, just like an uncontracted uterus after confinement; while on fruit it is small and firm, like the well-contracted uterus.

It was by mere accident that I came to the conclusion that animal food was not good for me, and I have been a vegetarian since 1896.

Professor Shattock from his researches concludes that vegetarianism—the recent rise of which he has recognized—may be the cause of appendicitis, leading to an increase in the formation of appendicular concretions. That conclusion, taken in connexion with my observations on the different effect of vegetables and of fruit upon the caecum, points towards food as having to do with the increase in the number of cases of appendicitis, and may help to direct the attention of physiologists to the physiological action of our common foods—a subject hitherto entirely neglected.

Denholm, Hawick. JOHN HADDON, M.D.

Reports of Societies.

TOXIC CAUSES OF IDIOCY AND IMBECILITY.

AT the ordinary quarterly meeting of the Medico-Psychological Association of Great Britain and Ireland, held at the rooms of the Medical Society of London on May 16th, when Lieutenant-Colonel DAVID G. THOMSON, President, was in the chair, two papers were read by Dr. ORR (Prestwich) and Major ROWS, R.A.M.C. (Maghull, Liverpool), on experimental toxic lesions in the rabbit's brain and their bearing on the genesis of acquired idiocy and imbecility in man. Dr. ORR said that the communication was a continuation of experimental work on the action of bacterial poisons on the nervous system. In the former work the induced toxic action was studied in the spinal cord only; in the present series the research had been extended to the brain, a capsule containing *Staphylococcus aureus* being placed in contact with the common carotid artery in the neck. The positive results so far obtained helped to explain the pathogenesis of certain obscure lesions of the central nervous system in man. Rabbits were used for experiment. The alterations seen as the result of the poison were typically those of coagulation necrosis. The neuroglia participated actively in the inflammatory reaction, and around the area of softening there was found to be much neuroglial proliferation and hypertrophy. There was a high degree of proliferation of the adventitia of the small vessels in the immediate vicinity of the softening. The research showed that the two factors, degree and situation, could produce dissimilar pathological results although the pathogenesis was the same. Applying this to clinical neurology it became evident that certain nervous syndromes, though widely different in symptomatology, were, pathogenetically, one and the same disease, the different symptomatology being largely due to the anatomical site of the lesion. The experiments also shed light on the genesis of the infantile cerebropathies, now regarded as due to toxi-infections of medium intensity contracted between the fifth and the eighth month of fetal life, or, more rarely, in early infancy.

Major ROWS, M.D., said that the term "vegetative system" comprised both the sympathetic and the autonomic systems. Under the term "vegetative nervous system" were included all the fibres which went to the organs having smooth muscles, such as intestines, blood vessels, glands, ducts, and skin, as well as the nerve structures exerting a secretory influence upon glands; it also embraced certain organs with cross-striated muscles, such as the heart, the beginning and the end of the alimentary canal, and the muscles of the genital apparatus. Anastomoses were common among the nerve fibres of the vegetative system. This system also had a much more independent action, and it reacted to drugs in an altogether different manner; indeed, it was from the latter that so much had been learnt about it. A sort of balance seemed to be maintained between the autonomic and the sympathetic systems, so that one assumed an exaggerated action if the influence of the other were interfered with. Both systems were much affected by the secretions of various endocrinic glands. Dr. Orr and he had demonstrated that changes could be produced both in the vegetative system

and in the central nervous system by placing a capsule containing pathogenic organisms in the neck, near the carotid artery, or in the abdominal cavity, and they suggested that the disturbances in this system were closely connected with the origin of the lesion in the central nervous system, a view which was supported by clinical evidence, instances of which were given.

Reviews.

ABYSSINIAN MEDICINE.

ABYSSINIA is a country virtually untouched by political, social, or scientific evolution; it remains as it was three thousand years ago, without any change beyond a superficial Christianity. The native lives a simple life in a healthy climate at an altitude of 3,000 metres. He is not the prey of alcohol, and is comparately free from cancer and tuberculosis. His natural indolence makes him patient in illness, and this is an aid to recovery. He holds scientific medicine in contempt, and places his trust largely in amulets, charms, and superstitious rites. But he also has a traditional pharmacopoeia of his own. An interesting account of Ethiopian medicine is given by Dr. MÉRAB,[1] whose position as private physician to the Emperor of Abyssinia, Menelik II, and head of the dispensary installed in the palace at Adis Ababa, gave him ample opportunities of studying the peculiarities of the native constitution. The most common disease in Abyssinia is tapeworm (*Taenia saginata*). The favourite remedy is kousso, which has sufficient reputation as an anthelmintic in this country to be maintained in the *British Pharmacopoeia* 1914. Notwithstanding the severity of its purging action it is often taken at regular intervals by Abyssinians who are free from the worm. Unwelcome visitors are told that the master of the house has taken kousso, as a formula equivalent to "not at home." Butter which has become rancid from long keeping—it may be ten years or more—is next in favour, either alone or mixed with honey. This "medicated butter" is largely used as a remedy for all sorts of ailments, notably for malaria. Syphilis is common, but the disease is generally mild among natives, though it is very severe in Europeans who contract it from Abyssinian women. Arterio-sclerosis, gout, and rheumatism are rare. Mérab estimates that there are one or two lepers in every thousand of the population of Abyssinia, making a total of 20,000 in the whole country. No measures are taken to stamp out the disease. Bone-setting of a rough nature is largely used among some tribes, who have also a certain skill in eye surgery. Massage is used in cases of recently consolidated fractures, unreduced dislocations, sprains, contusions, and neuralgic pains. Bullets are said to be extracted with the aid of a fly called *Ouagimbit*, which is placed on the wound and kept there till, in four or five days, it has eaten its way through to the foreign body, which is then removed with forceps! In battle bleeding is stopped with fresh dog's dung and a tight bandage or with boiling oil. On the whole Mérab's testimony goes to show that the Abyssinian suffers from few diseases in any way peculiar to himself, and is enviably free from many which afflict more highly civilized peoples.

OBSTETRIC EMERGENCIES.

THE call for a second edition of *The Difficulties and Emergencies of Obstetric Practice*,[2] by Dr. COMYNS BERKELEY and Dr. VICTOR BONNEY, within two years of its appearance shows that the profession in general has shared the favourable opinion of it which we expressed in the review of the first edition. The only changes in the present volume are the addition of some illustrations and the supplementing of the letterpress in some points. The whole work has been thoroughly revised at the same time.

To those who are unacquainted with it the book may be cordially recommended as an entirely practical work of reference. The authors have been careful never to lose sight of the aim of the book as expressed in the title, and have scrupulously avoided making it anything of a textbook. The arrangement and printing are excellent, the index is full and exact, and the numerous illustrations combine as much scientific accuracy as is compatible with the almost diagrammatic clearness essential in a work of the kind. The result is that the busy practitioner who wishes to refresh his knowledge or to receive guidance on any difficulty or emergency likely (or unlikely) to be met with in his obstetric practice may do so with the minimum of trouble and a maximum of profit.

HANDBOOKS OF MEDICINE.

DR. WILSON'S admirable *Handbook of Medical Diagnosis*,[3] first issued in 1909, is now in its fourth edition—a fact that may be taken as proof of the practical merits of the book. It is divided into four parts. The first and shortest of these is on medical diagnosis in general. The second, 350 pages in length, describes the methods of physical examination and laboratory procedures useful in diagnosis. The third, on symptoms and signs, is rather shorter, and gives an account of the ways in which diseases of the various systems of the body should be investigated. The fourth part, 800 pages in length, is to all intents and purposes a textbook of medicine from which all descriptions of treatment have been omitted. Thus it appears that this *Handbook* covers the ground usually occupied by two volumes—one on methods of diagnosis, the other on medicine in general, barring treatment. The text is clearly written, and errs perhaps on the side of undue fullness; it would be more impressive and convincing if the sentences and paragraphs could be made shorter. The matter of the text attains a high level of excellence, and seems well up to date. It is satisfactory to note that Dr. Wilson recognizes Poynton and Paine's *Diplococcus rheumaticus* as the cause of rheumatic fever; this recognition has long been delayed in America. We are not sure that we agree with the author in his estimate (p. 179) of the frequency with which double aortic disease (stenosis and reflux) occurs, as compared with the frequency of the double aortic ("to-and-fro") murmur. No reference to Graham Steell's diastolic murmur of relative pulmonary incompetence seems to be made, although the murmur is not rare in cases of well-marked mitral disease with considerable hypertrophy of the right ventricle. The book would gain if the magnifications of the figures of microscopic appearances were always inserted, so that the student could form some estimate of the real size of the objects depicted. These, however, are but unimportant defects in what is an excellent manual for advanced students and practitioners of medicine, and may be warmly recommended to such readers.

The fifth edition of *Wheeler's Handbook of Medicine*,[4] edited by Dr. W. R. JACK, has been revised, added to, and brought up to date. It gives a brief and workmanlike account of the subject in the condensed and tabulated form that is believed to be appreciated by medical students. It contains a great deal of useful information for examinees, and a fair amount of space is given to treatment. Like all books of its class it appeals to the memory rather than the intelligence.

BIOLOGY.

PROFESSOR CALKINS has produced a work on *Biology*[5] which should be read by medical students early in their careers. It does not attempt to cover the ground of any English examination; it is valuable because it is a sound introduction to the principles of biology and the essential results of modern thought and experimental work. Various

[1] *Médecins et Médecine en Éthiopie.* Par le Docteur Mérab. Paris: Vigot Frères. 1912. (Demy 8vo, pp. 218. Fr. 4.)

[2] *The Difficulties and Emergencies of Obstetric Practice.* By C. Berkeley, M.A., M.D., M.C.Cantab., F.R.C P.Lond., M.R.C.S.Eng., and V. Bonney, M.S., M.D., B Sc.Lond., F.R.C.S.Eng., M.R.C.P.Lond. Second edition. London: J. and A. Churchill. 1915. (Roy. 8vo, pp. 818; 302 figures. 24s. net.)

[3] *A Handbook of Medical Diagnosis.* In Four Parts: I, Medical Diagnosis in General; II, The Methods and Their Immediate Results; III, Symptoms and Signs; IV, The Clinical Application. For the Use of Practitioners and Students. By J. C. Wilson, A.M., M.D. Philadelphia and London: J. B. Lippincott Co. 1915. (Med. 8vo, pp. 1463; 14 plates, 408 figures. 25s. net.)

[4] *Wheeler's Handbook of Medicine.* By W. R. Jack, B.Sc., M.D., F.R.F.P.S.G. Fifth edition. Edinburgh: E. and S. Livingstone. 1916. (Cr. 8vo, pp 566. 8s. net.)

[5] *Biology.* By G. N. Calkins, Professor of Protozoology in Columbia University. New York: H. Holt and Co.; London: G. Bell and Sons, Ltd. 1915. (Demy 8vo, pp. 249; 101 figures. 7s. 6d. net.)

types of invertebrate animals and one or two plants are described, not always exhaustively, but rather as illustrations of some general principle of biology. Thus, in the description of the anatomy of the earthworm, emphasis is laid on the nervous system, the significance of the neurone, and of a reflex arc. Again, the chapter on classification and the phyletic significance of homologous organs leads on to a description of the lobster, a well-chosen example of serial homology. It is natural that Professor Calkins should explain the conjugation and division of Paramoecium in terms of the cell theory, the individual, and sex, but it should not be forgotten that an increasing number of biologists oppose him in this, and refuse to describe these phenomena as sexual, regarding the protozoa as non-cellular rather than unicellular. Professor Calkins has the valuable gift of explaining matters of theory clearly to the unlearned, and within this short volume he introduces his pupils to all that is of highest importance in the principles of zoology, botany, and physiology; his subjects range from the differentiation of cells and tissues, the action of crystalloids, and the effect of enzymes on protoplasm, to parasitism, immunity, and the Mendelian theory of heredity. The index is adequate and the stereographic drawings of internal anatomy are excellent.

Dr. CHARNOCK BRADLEY'S *Structure of the Fowl*[6] deals with its subject quite accurately, system by system, but we do not understand for what class of student it was written. Some of the common stumbling blocks, the disposition of the peritoneum and the nature of the coelom, for instance, are slurred over, while other matters are discussed in a manner suited to a student who has not yet mastered the anatomy of the much-dissected frog. It is a pity, too, that an occasional word is not given to the physiology of the parts described; we notice, for instance, that when the author describes the anatomy of the syrinx he makes no mention of the fact that it is the bird's organ of voice. The author does not always express his meaning with clarity, and in a few cases is definitely careless—for example, in his use of "cranial" for "anterior," or, as the Americans would say, "cephalad." The chapter devoted to the embryology of the fowl is one of the most successful in the book, and the subject is by no means an easy one to summarize. It would perhaps have been better to say either a little more or a little less about the organogenesis of the urinogenital system, and the pro-, meso-, and meta-nephroi and their ducts. The figures are good, and the diagrams of sections, histological and embryological, are an unusual but not unsuccessful feature of the book; if a fault must be found, it is that they are a little too simple; some of the cells lack walls, others nuclei. The book has an adequate index.

The *Textbook of Economic Zoology*,[7] by KELLOGG and DOANE, gives a broad outline of the whole animal kingdom, introducing the student first to a few types, the amoeba, the frog, and others, and then to each phylum in systematic sequence. Special attention is given to parasites and species of economic importance; the second part of the book is mainly devoted to insects which carry disease, or attack the orchard, the crops, or "garden truck." Short outlines are also given of some of the methods usually employed in controlling insect pests. All this information appears to be reliable, but the book undoubtedly suffers from a fault which is common to many elementary textbooks. Too much ground is covered; its educational value would have been greatly enhanced if the authors had been content to omit some of the smaller phyla and given more space to selection, variation, heredity, parasitism, and other general topics, some of which are discussed so shortly that they will hardly interest the elementary student, to whom the book is addressed. The illustrations, taken mainly from common American animals, are excellent, and the authors evidently desire to make their pupils study in the field, and think for themselves. Those parts of the book which are devoted to the pathogenic protozoa and the transmission of disease by insects are rather uneven; for instance, the majority of the trypanosome diseases of domestic animals are mentioned, but there is no reference to the fact that lice carry typhus. As the field which this excellent manual covers is so wide, its value would have been greater if a select bibliography had been appended to it.

Under the title of *Modern Problems of Biology*[8] Professor MINOT of Harvard University has published a very interesting course of lectures delivered by invitation of the Grand Duke of Saxe-Weimar at Jena, in December of 1912. The lectures were given before a mixed audience, a fact which must have added considerably to the difficulty of explaining so clearly the results of the latest research into the most intricate problems of biology. Special prominence is given to the work of American investigators, in view of the probability that such work would be less known in a foreign country than that of its own men of science. An introductory chapter deals with "the new cell doctrine," identifying as the chief problem of biology the investigation of the structure and composition not of cells as such, but of the living substance of which they are composed. The second lecture deals with cytomorphosis, the foundation of morphology, and its four stages—the undifferentiated or embryonic, the differentiated, the degenerative, and the culmination of this last in death. In the two succeeding lectures facts are adduced in support of the natural immortality of unicellular organisms, death being, in the author's opinion, the price paid by multicellular organisms for that higher form of existence which they owe to co-operative differentiation. The question of the function of conjugation is raised, the author citing the observations of H. S. Jennings as to the increased variability of paramoecium after conjugation, as compared with ordinary division. On this view sexual reproduction may be conceived as a modified form of conjugation, as it also favours variability. In a chapter dealing with the determination of sex, an account is given of the important discovery by Professor C. E. McClung of the part taken by the accessory chromosomes in the sexual cells of certain insects. In the second division of the spermatocytes the accessory chromosomes each pass undivided into one of the daughter cells. Thus there are produced two distinct forms of spermatozoa, and, contrary to McClung's first conclusion, it has been demonstrated by E. B. Wilson that those which contain an accessory chromosome determine the formation of females. In his last lecture Professor Minot, dealing with the conception of life, expresses the conviction that the phylogenesis of vertebrates is dominated by the evolution of consciousness. Consciousness he regards not as a form of energy but as a something *sui generis*, revealing itself by the transformations of energy which in some unknown way it brings about.

NOTES ON BOOKS.

THE handbook, *Alcohol and the Human Body*,[9] by Sir VICTOR HORSLEY and Dr. MARY STURGE, has now reached its fifth edition. It is issued at a price which places it within the reach of all. The case against alcohol could not be put more forcibly and fully than in these pages. The attitude assumed is very uncompromising, as may be judged from the statement on page 326, that "what is commonly described as moderate drinking has a most injurious influence on health and life."

The third part of Mr. JACKSON CLARKE'S book on *Protozoa and Disease* came out in 1912. The fourth part has now been published, under the title *Rhizopod Protozoa*.[10] The author now finds himself in a position definitely to affirm that the protozoa he finds to be the cause of such diseases a cystic ureteritis, molluscum contagiosum, and cancer are in truth protozoa akin to

[6] *The Structure of the Fowl.* By O. C. Bradley, M.D., D.Sc., M.R.C.V.S. The Edinburgh Medical Series. London: A. and C. Black. 1915. (Cr. 8vo, pp. 164; 73 figures. 3s. 6d. net.)

[7] *Elementary Textbook of Economic Zoology and Entomology.* By V. L. Kellogg and R. W. Doane. London: Constable and Co., Limited. 1915. (Cr. 8vo, pp. 542; 245 figures. 6s. 6d. net.)

[8] *Modern Problems of Biology.* By C. S. Minot, LL.D., D.Sc.Oxf. Philadelphia: P. Blakiston's Son and Co. 1913. (Demy 8vo, pp. 132; 53 figures. 1.25 dols. net.)

[9] *Alcohol and the Human Body.* By Sir V. Horsley, F.R.S., F.R.C.S., M.B., B.S.Lond., Hon. M.D.Halle, etc., Major R.A.M.C., and Mary D. Sturge, M.D.Lond.; with a chapter by A. Newsholme, C.B., M.D., F.R.C.P., D.P.H., and a chapter written in collaboration with Sir L. Rogers, K.C.I.E., Lieutenant-Colonel I.M.S., M.D., F.R.C.S., etc. Fifth edition, enlarged. London: Macmillan and Co., Ltd. 1915. (Fcap. 8vo, pp. 367; 39 figures. 1s. net.)

[10] *Rhizopod Protozoa: The Cause of Cancer and other Diseases,* being Part IV of *Protozoa and Disease.* By J. Jackson Clarke, M.B.Lond., F.R.C.S. London: Baillière, Tindall, and Cox. 1915. (Fcap. 4to, pp. 101; 67 figures. 7s. 6d. net.)

mycetozoa. He holds that our imperial attack on the cancer problem has been a failure. His book is excellently illustrated; the problems with which it is concerned are largely matters for microbiologists and microscopists to decide, for they turn on the interpretation of microscopical appearances, a subject on which opinions are notoriously likely to differ.

A Manual for Midwives,[11] by Drs. C. N. Longridge and J. B. Bannister, is a practical book written in clear language, and with the essential points printed in strong type so that they cannot be easily overlooked. That the book has already reached a second edition proves that it has met a real want. We are inclined to think that the frontispiece, excellent though it is, may be a little confusing to some of the readers, as it shows the head of the fetus in the upper part of the fundus uteri. An illustration in so prominent a place is seen before the text is read, and may lead a beginner to think that this is the normal position of the *fetus in utero*. We feel that in all manuals for midwives every possible element of confused thought should be avoided.

Chestnut pudding on the dinner table is all very well and is in its place, but such chestnut pudding as Mr. Geoffrey Rhodes[12] offers us in literary form is neither appetizing nor digestible. His book *Mind Cures* is made up mainly of Early Victorian platitudes interspersed with anecdotes from John Abercrombie, W. B. Carpenter, Hack Tuke, and other worthies. If the anecdotes do not illustrate the thesis that Mr. Rhodes seeks to inculcate, that is not the fault of the anecdotes, many of which are quite good, or were, until they were worn out, but because it is not clear what thesis he desires to inculcate.

[11] *A Manual for Midwives.* By C. Nepean Longridge, M.D.Vict., F.R.C.S.Eng., M.R.C.P.Lond., and J. B. Bannister, M.A., M.D., B.C.Camb., M.R.C.P.Lond., F.R.C.S.Edin. Second edition. London: J. and A. Churchill. 1915. (Cr. 8vo, pp. 339; illustrated. 3s. 6d. net.)

[12] *Mind Cures.* By Geoffrey Rhodes. London: Methuen and Co., Ltd. 1915. (Crown 8vo, pp. 286. 5s. net.)

ROYAL MEDICAL BENEVOLENT FUND.

At the meeting of the committee, held on May 9th, twenty cases were considered and £195 voted to fifteen of the applicants. The following is a summary of the cases:

L.S.A.Lond. who had practised at Hereford. Has now joined the R.A.M.C., and his inclusive pay is 18s. 6d. a day. He pays 17s. 6d. per week for a cottage. He gave up a practice worth £800 a year. Is married, and has one son, aged 16, at school at Dover, where the fees are £120. Applicant requires help to finish the education of his son. The boy has gained two scholarships worth £30, and if the Fund could provide £30 he could manage. His income is not sufficient to meet his expenses, which he puts down at—son £120, wife £100, self £100. Case sent by the Professional Classes War Relief Council. Voted £10 from the Emergency Fund and referred to the Guild.

Widow, aged 60, of L.R.C.S.Ire. who practised at Little Sutton and died in 1900. Applicant received about £25 per annum from property which was mortgaged, but owing to this being recalled, and the rate of interest on the new one increased and heavy repairs, it has taken the proceeds (£25). She has also taken in boarders, but recently has not been successful. Owing to this, the high price of food, and failing health, she finds herself in financial difficulties. Rent paid, £42 11s. per annum. Voted £10.

Widow, aged 56, of M.R.C.S.Eng. who practised at Bradworthy and died in 1908. Applicant has lost through bad investments all her late husband left. Has now lost her mental faculties. Has two daughters, aged 30 and 21, both governesses, who earn together £90, and one son, aged 26, single, an engineer with £160 per annum, and who provides a home for his mother, and the daughters give her £32 10s. Friends give £39. Referred to the Guild.

Widow, aged 70, of M.R.C.S.Eng. who practised at Liverpool and died in 1880. After the death of her husband she earned a living by taking in lodgers. One of her sons qualified as a medical man, and she kept house for him, but owing mainly to overwork through the war he died early this year, and all he left was an insurance of £250 which went to his mother. The applicant proposes to try and take lodgers again, but for the present has her son's house rent (£71 10s.) on her hands. Voted £10.

Widow, aged 57, of L.R.C.P.Edin. who practised at Blackburn and died in 1902. Used to earn a living by looking after children while their parents worked in the cotton mills, but owing to ill health has had to give this up. Has one daughter, aged 19, a shop assistant, who earns 15s. per week. This is their sole income apart from the fund. The Manchester Branch of the Guild speak well of this case and help a little. Previous relief, twice, £24. Voted £15 in twelve instalments.

Daughter, aged 69, of M.R.C.S.Eng. who practised at Cranbrook and died in 1890. Applicant is not very bright mentally, and quite unable to work. She has an annuity from another charity, £30. She has to pay £1 per week for board and lodging, and as the landlady with whom she lived has just died she may have to pay more. She is a difficult person to get on with. Previous relief, five times, £60. Voted £12 in twelve instalments.

Daughter, aged 54, of M.R.C.S.Eng., L.R.C.P.Dublin, who practised at Rickmansworth and died in 1901. Applicant was left quite unprovided for, and suffers from arthritis and fibrosis, etc. Only income £39 from a relative. Pays £13 for rent of one room. Relieved three times, £30. Voted £10 in two instalments, and referred to the Guild.

Widow, aged 62, of M.D., Ch.McGill, who practised at Waterloo, Liverpool, and died in 1914. Owing to the very long illness of her late husband he was unable to provide for his family. There are five children, aged 30 to 38. The two sons are abroad and unable to help, and of the daughters, one is suffering from tuberculous kidney, another is dyspeptic, and the eldest is the only wage earner, and has £91 per year; £29 paid in rent. Relieved once, £18. Voted £18 in twelve instalments, and referred to the Guild.

Daughter, aged 69, of L.S.A.Lond. who practised at Christchurch and died in 1880. Has a life interest in an old house at Christchurch, but owing to increasing expenses does not benefit from it. Lived with a sister, recently dead, who had an artist's pension of £50, which went into the general fund. Applicant earns a little as an artist, but finds it very difficult to obtain commissions at present, and her eyesight is failing. Relieved once, £18. Voted £18 in twelve instalments.

Daughter, aged 44, of M.D.Aberd. who practised at Glasgow and in Australia and died in 1891. Applicant was without any means, and trained as a masseuse, and was able to earn her own living until her health became impaired two years ago, and was then only able to take occasional work. Has recently had diphtheria, and is now recovering, and hopes to work again soon. Relieved twice, £20; last 1914, £10. Voted £10.

Daughter, aged 60, of M.R.C.S.Eng. who practised at Blackheath and died in 1880. Applicant mentally deficient, and has to be provided for by a sister who has an interest in a girls' school, and has a difficulty in making ends meet, and the help previously given has been greatly appreciated. Strongly recommended by the Guild. Relieved eight times, £69; last £10, April 2nd, 1915. Voted £10 in two instalments.

Widow, aged 40, of L.R.C.P. and S.Edin. who practised at Cliffoney, co. Sligo, and died in 1912. After her husband's death applicant opened a sweet shop in Edinburgh, and managed to get on until she had to undergo an operation in May, 1915. The Fund then made her a grant of £10. In April, 1916, her shop was blown up by a bomb from a Zeppelin, and all her stock and furniture destroyed, and she was not insured. Now wants help to re-establish herself. Postponed for further inquiries.

Daughter, aged 61, of L.S.A.Lond. who practised at Cheadle and died in 1874. Was left totally unprovided for, and, owing to ill health, has never been able to undertake permanent work. Earns a few pounds a year by sewing, and a friend provides £25 per year. Rent 4s. 9d. per week. Relieved ten times, £88; last £12 12s., May, 1915. Voted £12 in twelve instalments.

Daughter, aged 65, of M.D.St. Andrews who practised at Dover and died in 1881. Has endeavoured to earn a living by conducting a servants' agency, but during the last two years, and especially since the war, has been very unsuccessful. She has also been in the habit of taking in some boarders, but these have ceased. Relieved twice, £20; last £10, May, 1915. Voted £10.

Widow, aged 49, of L.S.A. Lond. who practised at Leyton and died in 1914. Was left without any means with five young daughters. On the death of her husband it was discovered that the practice was much involved, and had to be sold to pay the creditors. Her brother, a medical man, bought the practice with a view of helping his sister and her children, but owing to the high salary that had to be paid to a locum, and the increased cost of drugs, the practice was not paying. Help wanted towards the education of the children. Previous relief, three times, £25. Voted £10.

M.R.C.S.Eng., married, and who had practised at Manchester and London. Owing to ill health unable to earn anything, and has lost all his savings. Only income an old age pension. Relieved twice, £19 10s. Voted £18 in twelve instalments, and referred to the Guild.

Wife, aged 50, deserted by her husband, who is an M.R.C.S.Eng. Has no means, and is a chronic invalid. Has one daughter, aged 22, who nurses her mother, and has a few day-school pupils, from whom she receives 6s. 6d. per week, of which 5s. has to be paid in rent. Relieved three times, £36. Voted £12 in twelve instalments.

Subscriptions may be sent to the honorary treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.

British Medical Journal.

SATURDAY, MAY 27TH, 1916.

THE ENROLMENT SCHEME AND THE MILITARY SERVICE ACT.

THE Military Service Bill, when it left the House of Commons last week, contained no provision for dealing with the special circumstances attending the recruitment of medical officers for the army. In the House of Lords a new clause was introduced into the bill by the Government spokesman, Lord Sandhurst, at the instance of the Army Council. In the House of Commons it was carried, after a division, by 163 to 42. It forms part of the scheme of the Army Council for obtaining doctors for the army. They are needed to serve as doctors with commissions in the R.A.M.C. and not as ordinary combatants. The clause provides means whereby medical officers needed for service in the army may be selected with due regard to each of three considerations—the needs of the medical services of the forces; the medical needs of the civil population; and the financial and other circumstances of the individual doctor. The necessary adjustments can only be effected by a body which, in the first place, can make arrangements for carrying on the work for the civil population of the man selected to accept a commission in the medical service; which, in the second place, has local knowledge at its disposal; and which, in the third place, is capable of considering the problem as it arises in the different areas, from a central standpoint and on a comparative basis. The local tribunals under the Act are obviously not bodies capable of adjusting the matter, for they can only consider each case from its strictly individual and local aspects, and can do nothing in the way of providing for the carrying on of the work of the doctor who joins the medical service of the army or navy. Nor are they in a position to discover the real facts as to his position. They will not, for instance, know whether arrangements can be made for his work to be done by neighbouring colleagues, or for part of the income from that work to be secured for him or his wife during his absence. A local tribunal, being unable to judge whether a doctor could be spared without grave injury to the civil needs or without involving him in undue financial hardship, might therefore decide to exempt a doctor who could really be spared, with the result that some other practitioner would be taken whose departure would be seriously injurious to the medical needs of the civil population, or to whom the personal hardship would be much greater.

The new clause provides "for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners," and directs that any application made by a medical practitioner on any ground other than that of conscientious objection shall be referred by the tribunal to the appropriate professional committee, and that the recommendation of this committee shall be binding on any tribunal. The necessary machinery already exists in the professional committees which, at the request of the War Office, have been for some time past organizing the medical profession for war purposes. The enrolment scheme which they have established is designed to enable the medical services of the navy and army to obtain the medical men they need and to ensure that the medical officers shall be selected in a manner to avoid needless injury to the medical requirements of the civil population, while having regard to the individual doctor's circumstances.

As readers of this JOURNAL are very well aware, enrolment under the scheme means that the enrolled doctor gives an undertaking to accept a commission in the Royal Army Medical Corps or, if he prefers, in the Royal Naval Medical Service if and when he is offered one. Though a large proportion of the doctors of military age and capacity have accepted this obligation, there is still a substantial number who have not done so. The reasons for this abstention no doubt vary in individual cases, but it is believed that the total number has been considerably affected by the possibility of resort to the local tribunals in the expectation of obtaining exemption from service, or the offer of service.

It is believed that the clause will also influence the decision of doctors between 41 and 45, who, though not within the compulsion of the Military Service Act, are eligible for commissions in the R.A.M.C. As is well known, a considerable number of men between these ages, both single and married, have already enrolled, but some have made the not unnatural condition that their offer of service should be contingent on the younger men being selected first. Evidence, in fact, has been afforded during the last few months that medical men between 41 and 45 may be deterred from enrolling by the apprehension that younger and perhaps unmarried members of the profession in the district may obtain exemption from the local tribunals. It is stated that some have in certain districts already done so, to the detriment of the enrolment scheme. It is clearly of great importance to secure as large an enrolment list as possible, since the wider the field of selection the better can the medical needs of the army be met, and the smaller will be the risk of endangering the civil needs in any area, or inflicting avoidable hardship on individual practitioners.

The only professional committees in England and Wales which possess the knowledge required to formulate recommendations to tribunals are the Central Medical War Committee and the reference committee appointed by the Royal Colleges of Physicians and Surgeons for the special consideration of the consultant and teaching staffs of the metropolitan hospitals. In Scotland the body corresponding to these is the Scottish Medical Service Emergency Committee. These two committees have been working for the War Office for nearly a year, and also for the Central Tribunal, of which Lord Sydenham is chairman, established under the principal Act (the first Military Service Act, 1916). The work of the Scottish Medical Service Emergency Committee is very thoroughly organized, and it has obtained accurate information with regard to all localities in Scotland. In England and Wales the Central Medical War Committee has the assistance of local Medical War Committees established in all parts of the country, from which it has obtained and can continue to obtain full and accurate information.

We learn that the War Office has decided to recognize, under the regulations to be made in fulfilment of the new clause, these three existing professional committees—namely, the Central Medical War Committee, and the reference committee of the Royal Colleges, for England and Wales, and the Scottish

Medical Service Emergency Committee for Scotland. We are informed that an Order in Council to this effect will be issued at once.

Thus, under the new clause, any application by a medical man to a tribunal for exemption from military service on any ground other than that of conscientious objection will be referred to the appropriate professional committee, and its decision will be final and binding on tribunals under the Act.

In its practical working, however, the new clause will apply only to those medical men who have not taken the precaution of enrolling, or do not enrol within such time as may still be available, either with the Central Medical War Committee for England and Wales (429, Strand) or the Scottish Medical Service Emergency Committee (at the Royal College of Physicians, Edinburgh).

Under the instructions issued by the Army Council the enrolled man is not to be called up by the recruiting department; if, by inadvertence, an enrolled man is so called up, it will be sufficient for him to produce his certificate of enrolment to stop all proceedings. The unenrolled man will have to go through a more roundabout process. He will have to apply for exemption to the tribunal under the Act, which will be bound to refer the matter to the professional committee—that is to say, his case will, in the end, go before the same professional committee as it would go before directly were he enrolled, and, as has been said, the recommendation of the professional committee is binding on any tribunal constituted under the Military Service Acts.

THE MORTALITY AMONG EDUCATED INDIANS.

UNDOUBTEDLY the death-rate in India, judged by the better of the European standards, is unduly high. More than 90 per cent. of the Indian population lives and dies without any adequate sanitary care or control; in 1911 more than four million of the inhabitants of India died of preventable fevers, malaria accounting for at least a million deaths; of the sixty-four largest towns in India, seven have an annual death-rate exceeding 70 per 1,000, and in only twenty-five was the rate below 30; in England the death-rate is now below 15. The Indian male at birth has an expectation of less than twenty-three years of life, whereas the Englishman's expectation of life is over forty-six years. In England the annual death-rate is lower in the upper classes than it is among the proletariat; in India, contrariwise, the educated classes have an even higher death-rate than the uneducated and poorer masses.

The chief conditions that prejudicially affect the health of the inhabitants of India have recently been subjected to a searching analysis[1] by Lieutenant-Colonel Prasad, I.M.S.(ret.), more particularly as they affect the educated classes of the population. Any one, he says, who is acquainted with modern India and has been in the country for any length of time, must have been struck by the frequency of premature and sudden death among young Indians of the well-to-do and educated classes. His essay is based on the recently collected experiences and opinions of the chief Indian medical and lay authorities who may have had occasion to consider the matter in its various bearings. Dr. Prasad is himself a Hindu and has worked as a medical officer for many years in India, and so is able to write with authority upon this very complicated question. The high mortality he connects exclusively with the lack of adequate hygiene, using the term in its widest sense, that is still inevitable in the lives of almost all the inhabitants of India.

He illustrates this lack of hygiene by considering in turn all the various departments of Indian life and up-bringing. In the case of marriage, he notes that 98 per cent. of Indian girls are married before they reach the age of 15; the bridegroom is likely to be of much the same age. But in the upper classes a man can hardly complete his education before he is 25. Dr. Prasad would therefore have him defer marriage until about this age; yet if a boy remains unmarried until he has passed all his examinations, parents argue that they will not be able to secure for him a girl of good family, as no one wishes to give a girl of 15 to a man of 25. None the less, the common early marriages are, he holds, ruinous to the health of the contracting parties and are the chief cause of the terribly high mortality among the first children born to these youthful parents. Dr. Prasad points out that there is crying need for improvement in the sanitation of Indian towns and dwelling houses, in respect particularly to the supply of fresh air and good potable water. He holds that the average Indian diet is too nearly vegetarian and that it is lacking in protein, with the result that diabetes mellitus is of common occurrence. Here he enters upon a question that is nowadays widely discussed in India, and still far from settled. He is in favour of increasing the number and improving the quality of the games used for exercise, and gives a number of admirable instructions in personal hygiene that deserve general adoption.

The essay contains many severe comments on the low position of women, the lack of training and education in the all-important duties of motherhood, the survival of the *purdah* system, as well as on the deplorable effect of the system of early marriage. In Bombay the infantile mortality for the first year of life varies between 379 and 419 per 1,000, and it stands at 213 for the whole of India; in Norway, Sweden, and Hampstead, according to Dr. Prasad, it is only 50 per 1,000, but it is not quite fair to take the very special population of that suburb as a standard of comparison for the great population which includes all ranks and occupations.

He has much to say as to the changes that seem necessary in the education of Indian children, and in the local schools and colleges; only five in a thousand Indian women, it is said, can read and write.

The final conclusion to which he comes is this—that sanitation is the crying need in India at the present moment. He hopes to see the sanitary administration of the country put upon the same governmental basis as the departments of Public Works and Education, and extended downwards until it comes into touch with a proper staff of sanitary labourers in every town and village. As he says, sanitation "is the ultimate basis of all prosperity, and should be the first plank in the platform of every scientific and civilized government." He is inclined, perhaps, to make light of the difficulties and inertia that must impede the progress of modern improvements in a conservative population, but his essay is worthy of full consideration by those who have to deal with the problems raised, and is written by one who has the advantage of a full knowledge of the special obstacles that will have to be met and overcome if the high death-rate among Indians of all castes and classes is to be lowered.

[1] *Health and Mortality amongst Educated Indians.* By K. Prasad, M.D.Edin., Lieutenant-Colonel I.M.S. (retired). Bahadurganj, Allahabad: The Panini Office. 1915. (Med. 8vo, pp. 178, Rs.2.8.)

THE CHEMICAL TREATMENT OF CEREBRO-SPINAL MENINGITIS.

IT is notorious that the curative treatment of cerebro-spinal meningitis is at present very unsatisfactory. In certain hands the use of antimeningococcal serum has proved satisfactory up to a certain point; many, however, of the practitioners who had to deal with epidemics of the disease in this country in 1915 came to the conclusion that treatment by repeated lumbar puncture was as good as treatment by lumbar puncture combined with the injection of antimeningococcal serum. Perhaps the serums available were not homologous with the types or strains of meningococci that were being met with. The possibilities of the treatment of the disease by intrathecal injections of chemical antiseptic drugs have recently been brought once more to the front in America. In 1902 Seager reported very favourably on the use of lysol in this way, on the strength of his experience of an epidemic of cerebro-spinal fever at Lisbon. The first results were not confirmed by later observations, and the treatment was dropped. Subsequently protargol was employed in the same way, in place of lysol. Drs. Flexner and Amoss[1] have studied the effects of these drugs in the treatment of experimental infections in monkeys and young guinea-pigs with meningococci. Neither protargol nor lysol proved to have any curative action on the experimental peritoneal infection of young guinea-pigs with young cultures of the meningococcus, and protargol was without curative action in subarachnoid meningococcal infections in the monkey. On the contrary, these authors point out that both drugs are antileucotactic and antiphagocytic in their influence on the leucocytes, and are potent protoplasmic poisons. Recovery from meningococcal infections in both man and experimental animals is accomplished chiefly through the process of phagocytosis. The specific antiserum acts curatively by increasing the emigration of leucocytes, by directly promoting phagocytosis, by agglutinating the meningococci, and also by neutralizing the bacterial endotoxin; lysol and protargol have none of these actions to their credit. Hence, whatever the theoretical bactericidal advantages drugs possess, it is more than offset by the harmful effects they cause. What is wanted in the treatment of cerebro-spinal meningitis is an antiserum that represents the several types and many strains of meningococci. The authors say that this problem is now in a fair way to being solved; there is nothing to show that treatment by chemicals or antiseptics has any future before it.

[1] S. Flexner and H. L. Amoss, *Journ. Experim. Med.*, Baltimore, 1916, xxiii, 683.

RESULTS OF SANATORIUM TREATMENT.

IN a somewhat belated report the Council of King Edward VII Sanatorium at Midhurst present the account of their stewardship for the twelve eventful months ending July, 1915. Disturbed in the even course of its work by the requirements of the War Office, the sanatorium made provision for consumptive soldiers during the early months of 1915, but since the assumption of responsibility by the Insurance Commissioners during the month of June, 1915, the normal routine has been resumed. The absence of the first assistant medical officer and of the pathologist on military duty has necessitated the curtailment of some of the pathological and research work, and no reference to it appears in the report. The results of the treatment of 352 patients are recorded, and these include 94 military patients. The use of tuberculin was discontinued at the end of the year 1914. It had been employed in treatment for three complete years, and a long time must now elapse before its effect can be estimated with any certainty. Thus far it has not been shown to increase the efficiency of sanatorium treatment to any appreciable extent. In the tables of results the details of cases in which the presence of tubercle bacilli were demonstrated are kept separate from those in which they were not. Every effort would appear to have been made to follow up the after-history of cases discharged, and the tables showing the number of patients alive for each successive year after discharge, with and without bacilli, are highly instructive. Of 1,461 patients discharged (with bacilli) in eight years, 714 were dead, 608 still living, and 139 lost sight of, while of those without demonstrable bacilli only 47 out of a total of 369 were dead, 271 still living and 51 lost sight of. These figures point once more with great force to the paramount need for treatment of the disease before the process of destruction has begun and the escape of bacilli rendered possible. Until this great lesson has been thoroughly instilled into the public mind, the relative success of sanatorium treatment will continue to be very far below the level at which it aims.

THE PROBLEM OF INSTINCT.

To what extent is the view still prevalent among biologists that instinct is a rudimentary form of the function which culminates in reason justifiable? Professor Bergson, a pioneer critic and opponent of this interpretation, regards it as a legacy from the doctrine of Aristotle, who saw in vegetative, instinctive and rational life three successive degrees of one and the same tendency, whereas they are, in his own opinion, "three divergent directions of an activity that has split up as it grew," the difference between them being one of kind, not merely of degree. The fact that we may all agree in regarding man as the masterpiece of Nature hardly justifies the conclusion that all organisms are to be appraised in terms of their approximation to the human type. Evolution is too vast and multiform a process to be fitly compressed within the conception of a linear process; there is much to be said for Bergson's contention that in the plant, the animal and man life reveals itself as a trichotomy, branching off at its outset in three main directions, and further subdividing in pursuit of many diverse goals. In Mr. N. C. Macnamara's *Instinct and Intelligence*, recently reviewed in these columns, the traditional view of instinct as a stage on the ascent towards reason is tacitly assumed, and the capacity for intelligent behaviour shown to increase with every advance towards the higher complexity and specific mechanism of the nervous system characteristic of man. This view is, we gather, endorsed by Colonel Kenneth Macleod in an able paper on Instinct and Reason, contributed to the April number of the *Caledonian Medical Journal*. Colonel Macleod even stigmatizes as a fallacious abstraction "the radical distinction commonly postulated between instinct and reason." Bergson's contention is that neither instinct nor reason are met with in experience in their purity, and that there is always an element of rationality in "instinct," of instinct in "reason," and we are inclined to support the author of *L'Évolution Créatrice* in making the distinction one of kind, not degree. If a generalization might be ventured, it would be that the typical instinctive act finds the means through the end, the typical rational act the end through the means. It is questionable whether the definition as "instinctive" of actions intelligently learned and become by force of habit automatic, may not have prejudiced the issue, for many truly instinctive actions reveal an almost transcendent precision and complexity, and yet cannot be ascribed, either from an evolutionary point of view or from that of immediate inception, to intelligence as commonly understood. Nor is it easy to believe that the power of instinctive reaction in its higher and more complex manifestations can have been built up piece-meal out of tentative reactions, under the sole guidance of natural selection. Even if it be admitted with Colonel Macleod that in a general way and in the human organism "certain portions of the nervous tissue subserve certain functions; the most

distal elements simple reflex acts, intermediate parts, such as the basal ganglia, instinctive adjustments, and the cerebral lobes ratiocination," a *caveat* must be entered against the assumption that instinct is in itself and in its own sphere nothing more than we find it in ourselves. For there are good grounds for suspecting that we have developed reason not by the perfection but at the expense of instinct. And that being so, the elucidation of the problem of instinct should be sought not so much by the study of man or of the higher mammalia as by that of organisms in which its guidance is, if not *unmixed*, at any rate predominant.

FOOD AND DRINK.

WE have received a copy of the *True Temperance Annual*, 1916, issued by the True Temperance Association, Caxton House, Westminster, S.W. We know nothing about the association beyond what is to be gathered from this annual, but it would appear to be inspired by the same motives as the Public House Trust Company. Its two chief aims are "to create a healthy and reasonable public opinion on the subject of temperance in drinking," and to encourage the development of the public house into a place adapted to the social needs of the people, which to-day it is not. The community contains a certain proportion of persons who are so unfortunately constituted that, if they drink alcohol at all, they cannot resist the temptation to drink too much; there are those also who enjoy getting drunk, and set out on a holiday with the deliberate intention of returning home drunk. At the other end of the scale are persons so impressed by the evils arising from the use of alcoholic beverages that they would stop their sale altogether. Between these two extremes there is a very large number of persons who are in the habit of taking alcoholic beverages with meals, and who, judging from their own personal experience and observation, do not consider total abstinence necessary for themselves or total prohibition a sound national policy. But they hold, or the majority of them hold, that the ordinary public-house with its stand-up bar—a mere drinking place—is a national evil. Their view has been well stated by the Bishop of Birmingham when he said, in a diocesan address last November, that the remedy for drunkenness in this country lay very greatly with the improvement of the public-house itself, and that in countries where food and non-alcoholic drinks had the same attention paid to them in the public hostelries as alcoholic drinks there was less likelihood of over-drinking. This opinion seems to be confirmed by the experience of France, where there has been a serious decay of the "café habit" and a growth of drinking bars, with a corresponding increase of the number of alcoholics. The evil and its remedy were recently discussed very fully by the Académie de Médecine, which reported in favour of stopping the sale of spirituous liquors containing over 50 per cent. of alcohol and of imposing a supertax on all drinks containing more than 15 per cent. of alcohol. Two or three members objected to the issue of a wine ration to French soldiers, but this was not approved by the large majority, and the ration is still being issued, though the sale of spirits is subject to severe restrictions. Cardinal Bourne, last February, said that in this country we needed, to take the place of public-houses, institutions providing recreation and the equivalent of home comfort. If by the last phrase food is intended to be included then the views of bishop and cardinal appear to be very nearly identical. The Central Control Board (Liquor Traffic) seems to hold a very similar opinion, for its first report contained the following paragraph: "The Board, however, attach very considerable importance to the constructive side of their work, and this side has received their careful consideration. The Board incline to the view that excessive drinking may often be traced to the want of adequate facilities for food, refreshment, and recreation, particularly in conjunction with long hours and overtime. The improvement of public-houses and the provision of canteens may therefore do much to render less necessary the imposition of purely restrictive measures. The Board are accordingly encouraging by all the means in their power the efforts which are being made, whether by employers or by public-spirited voluntary societies or by other bodies interested, to improve the conditions under which adequate facilities for food and drink can be secured in munition and transport areas." The policy here outlined is one which could be applied everywhere, and, to put the matter on the lowest ground, we believe that there are not wanting abundant signs that the licensed trade will find it to its interest to abandon its present attitude. The evil of drunkenness and the failure of dealers to do anything to mitigate it have so impressed themselves on the minds of the people of Canada that total prohibition is now in force in many States, and will, it is thought, before long apply to the whole Dominion. Another sign of the times is that the Central Control Board has, at the request of the naval authorities, made an order prohibiting entirely the sale of spirits in the western parts of Inverness-shire, Ross-shire, Cromartyshire, Skye, and all the outer islands from Lewis to Barra.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.[1]

THE greater part of the current section of the *New English Dictionary* is the work of the late Sir James Murray, the remainder having been completed by the Scriptorium staff, with editorial revision by Dr. W. A. Craigie. The part of the alphabetic rubrics included in it runs from *turndun* to *tzirid*, neither of them familiar words. A *turndun* is a bull-roarer or rhombus, and a *tzirid* a jerid or wooden javelin. It is only when the last few pages of this section are reached that medical terms appear in any profusion. This is to be explained by the fact that in them only do words derived from the Greek make a show. They all begin with *ty*, and they come from τύλος, a knob, or τύλη, callus; from τύμπανον, a drum; from τυφλός, blind; from τῦφος, smoke, vapour, stupor, or conceit; and from τῡρός, cheese. There is, for instance, *tylosis*, the name given to three medical states—to an inflammatory disease of the eyelids, to an affection of the mucous membrane of the lips and mouth, and (most commonly) to a callous condition of the skin of the palms and soles. The earliest illustrative quotation goes no further back than 1890, but *tylotic* is illustrated from the year 1883. *Tympanum*, a drum, has given rise to a large group of very interesting medical words, including the obsolete *tympan* ("a dysease in the bely, enfleure"), and the more modern *tympanectomy* and *tympanic*, and *tympanites* and *tympanitic*, and the big group of the *tympano-* compounds. The *Dictionary* illustrates interestingly the curious figurative meanings which have been attached to some of these medical terms. There is *tympanize*, for instance, whose original meaning was to affect with a tympany or to distend the abdomen with gas, but which came to signify to be puffed up, to be proud; and so, for example, came C. Harvey's line, "My windy thoughts with pride are tympaniz'd," and Nashe's statement, "The therd sonne of Pride is Atheisme, which is when a man is so tympaniz'd with prosperity . . . that he forgets he had a Maker." *Tympany*, too, has had a wide use in medicine, and, figuratively, outside of it. It has not been restricted to distension of the abdomen by gas or air in the intestine, but has sometimes been employed for any morbid swelling or tumour. Thus, although John Wesley in his *Primitive Physic* (a very popular book in its day) referred to "the Tympany or Windy Dropsy," Cotgrave (in 1611) wrote of "Mole, a timpanie, or Moone-

[1] *A New English Dictionary on Historical Principles*. Edited by Sir James A. H. Murray, Henry Bradley, W. A. Craigie, and C. T. Onions. Vol. X, Turndun—Tzirid. By Sir James A. H. Murray. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, Melbourne, and Bombay. Oxford University Press: Humphrey Milford. April, 1916. Price 2s. 6d. net.

calfe, a shapelesse lump of flesh, or hard swelling in the wombe." But it was further extended to mean a pregnancy, and a quotation of 1590 says "The maid fell sicke, and her disease was thought to be a timpany with two heeles." Davenant (1649) has, "Midwives believe that it foretells A hopeful timpany to come." Donne (1610) is, of course, using it figuratively when he speaks of "this Timpany or false conception, by which spirituall power is blowne up, and swelled with temporall." How *typhlitis* comes from the Greek word meaning blind, and *tyroma*, *tyrosin*, and *tyrotoxin* from the Greek name for cheese, is plainly told, but the reader is left rather in doubt as to the connexion existing between *typhus* meaning pride, haughtiness, or conceit, and the "fever characterized by great prostration and a petechial eruption, and occurring chiefly in crowded tenements." The connecting link is to be found in the fact that whilst the Greek word τῦφος meant smoke or vapour and therefore vanity or conceit (mental smoke!) it also signified stupor, and that symptom is common in typhus fever. The distinction between *typhoid* and *typhoid fever* is well and clearly drawn, and it is to be noted that the earliest illustrative quotation of typhoid fever given is dated 1845 (Budd, *Diseases of the Liver*). There are not a few other interesting medical or semi-medical terms in this part of the great *Dictionary*, which has now reached the end of T, with some blanks in S to be filled in.

TELESCOPIC SIGHTS FOR RIFLES.

RECENTLY when discussing trench warfare with a sergeant on furlough from France, he was asked whether the German snipers were better shots than the English. He stated that the Germans were more successful because their snipers were provided with telescopic sights which were illuminated at night. This device, he stated, placed them at a great advantage as compared with our own men, who, he stated, had no such aids to efficient marksmanship. We are well aware that telescopic and mirror sights are delicate and easily damaged, and are in consequence not well suited for general military use. There seems, however, no valid reason why picked shots detailed for special duty should not be provided with the most effective sights which exist, even if the rifle so fitted require special care. Several optical sights have been devised, and some of them have done excellent service in match shooting. They may be divided into three classes—the use of lenses without any tube, as in the early aërial telescopes; the employment of lenses to give a reference line, with or without optical aid, the so-called collimating sights; and finally, telescopes, prismatic or otherwise, complete in themselves with arrangements for elevation and deflection, and with means for ready attachment to the rifle. The best known telescopic sight is that of Dr. Common, which he perfected in 1901; as regards principle it has not been improved on. The Zeiss prism telescope sight is really a small periscope; it has the disadvantage that considerable light is lost in the prisms, far more than in a simple telescope. In this sight, and in the similar Goerz prism sight, means are provided for illuminating the cross wires at night. An illustrated article on telescopic sights is to be found in *Nature* for February 3rd, 1916.

EXTINCTION OF BOMB FIRES.

THE committee appointed by the Home Secretary to make experiments to test the value of dry powder fire extinguishers, as compared with water and other "first-aid" appliances for extinguishing or effectively controlling fires such as are likely to be caused by bombs, has reported generally against the use of such powders, which it considers to be inferior to water.[1] Experiments were conducted by dropping an incendiary bomb through the first floor of a condemned house and allowing it to burn for forty-five seconds. The original intention of the committee was to allow the fire to burn for three minutes before attacking it, but it was found that it had in the interval become so fierce that the operator was unable to approach near enough to apply the powder extinguishers. In one such experiment the fire was extinguished in six minutes by the application of 18 gallons of water from a small hose jet. The general conclusion of the committee is that none of the agents employed, including water, could be said to have any material effect on the combustion of the bomb itself, but that there was a great general difference between those experiments in which water was used and those in which dry powder was used. The spread of the fire caused by the bomb was greatly limited, and in some cases totally prevented, by the application of water, whereas after the application of dry powder the fire continued to burn, although at each application some temporary check to the fire was noted. Analyses made for the committee in the National Physical Laboratory showed that dry powder fire extinguishers generally contained as their main constituent sodium bicarbonate, the amount of which varied in the different samples examined from about 42 per cent. to nearly 56 per cent. Some of the powders analysed contained also varying proportions of calcium carbonate. Sodium bicarbonate when heated gives off a certain quantity of carbon dioxide gas, but the committee thinks it doubtful whether the quantity generated has a materially effective influence on the action of the powder as an extinguisher, except possibly in small fires of a special nature and limited extent. Water, though failing to extinguish the bomb itself in its earlier stages of combustion, was found far more effective than dry powder, the wetting of the surrounding material preventing the spread of the fire. Water proved itself also much the more effective extinguishing agent for the fires caused by bombs. The analyses of the dry powders made for the committee showed that if the whole of the carbonic acid available on heating were given off suddenly when the powder was thrown upon the fire, approximately 1 cub. ft. of gas would be formed for each pound of powder used. The smothering effect of this quantity of gas is contrasted with that of the enormously larger volume of steam generated by the vaporization of 1 lb. of water, which gives over 25 cub. ft. (or over 1,600 times its volume) of steam at atmospheric pressure. The committee states "that most of the dry-powder fire extinguishers sold in this country are retailed at prices which can only be described as extortionate considering the cost of their constituents. The substance said to be the vital constituent—bicarbonate of soda—may be bought at present for 4s. 6d. per cwt., or almost exactly ¼d. per lb. Thus the cost of the bicarbonate of soda contained in a tin of powder of the usual size could not exceed 1½d., the other constituents being still cheaper." The committee also made some experiments with sand, which it found to be less effective, weight for weight, than the dry powder, though three buckets full of sand (about 144 lb.) extinguished a fire which three tubes of a dry powder, weighing nearly 13 lb., failed to do. The committee considers that similar smothering effects could probably be obtained from almost any dry inert substance in sufficient bulk. In conclusion, the committee expresses the confident belief that by far the best extinguishing agent is a plentiful supply of water applied in the manner most convenient, and that the use of powder fire extinguishers is to be deprecated not only because they give a misleading sense of security, but because they are practically useless for extinguishing or effectively controlling fires likely to be caused by bombs. As to the best way of applying water, the committee ascertained that the same amount of water was more effective when directed in a jet from an extinguisher than when applied by buckets. This was probably due to the greater force of the jet and to the easier means of directing it. The committee adds a word of caution as to using only

[1] H.M. Stationery Office. [Cd. 8250.] Price 1d.

extincteurs of reliable make, since fatal accidents have occurred from the employment of extincteurs of faulty construction or unsuitable type.

BENEVOLENT FUND FOR THE R.A.M.C. TERRITORIAL, SPECIAL RESERVE, AND NEW ARMIES.

A meeting of medical officers of the Territorial, Special Reserve, and new armies to consider further the advisability of establishing, for the benefit of the widows and orphans of officers, non-commissioned officers, and men, some kind of benevolent organization similar to that which exists in the regular Royal Army Medical Corps, will be held at the Royal Army Medical College on Thursday next, June 1st, when Director-General Sir Alfred Keogh will take the chair at 2.45 p.m. Meantime, we understand that Lieutenant-Colonel G. St. C. Thom, R.A.M.C., War Office, S.W., will answer inquiries as to the purpose of the meeting.

PATHOMETRY.

At the meeting of the Royal Society on November 11th, 1915, as was noticed in our columns at the time, Sir Ronald Ross read an introductory paper on pathometry, indicating the method he proposed to follow in studying the nature of the functions according to which the number of individuals infected with some disease should vary from time to time, on the supposition that the laws governing the rate of transference were already known *a priori*. The Royal Society, which published this first part of his paper in its *Proceedings* of February 2nd, has now made a special Government grant to assist him in carrying out the detailed calculations necessary for the second part of his paper. Miss Hilda P. Hudson, Sc.D., lecturer on pure and applied mathematics in the London University Department of the West Ham Technical Institute, has been appointed to assist in the work, which will be partly carried on in the Marcus Beck Laboratory of the Royal Society of Medicine.

AMERICAN MEDICAL MISSION.

The United States authorities have appointed a medical mission to study war conditions in Europe. Its members—Colonel Bradley, Major Lyster, and Major Ford, of the United States army, and Surgeon Pleadwell, of the United States navy—have already arrived in this country. The members of the mission were entertained to dinner at the Athenaeum Club on May 24th by Director-General Sir Alfred Keogh and Sir William Osler, when they had an opportunity of meeting a number of officers of the Royal Army Medical Corps, the Canadian Army Medical Corps, and the Medical Service of the Royal Navy. Among the guests was the American Ambassador, who paid a striking tribute to the work done by officers of the Medical Services of the United States Army and Navy in the suppression of yellow fever and malaria, and in bringing ankylostomiasis under control in Puerto Rico and the Southern States. Sir Alfred Keogh endorsed this tribute, and had some weighty words to say on the importance of the study of administrative work and the too common neglect of it by men of science. The plans arranged for the mission include an inspection of the system of dealing with the sick and wounded in this country, to be followed by a study of the hospitals and other medical arrangements in France.

Sir James Alfred Ewing, K.C.B., F.R.S., has been elected Principal of the University of Edinburgh, in succession to the late Sir William Turner. Sir Alfred Ewing, who is a graduate of the University (M.A. and Hon. LL.D.) has been for the last thirteen years Director of Naval Education; before that he had been in succession Professor of Mechanical Engineering in the Imperial University, Tokyo, of Engineering in University College, Dundee, and of Applied Mechanics in the University of Cambridge. His scientific work has been chiefly in the investigation of magnetism and the physics of metals.

Medical Notes in Parliament.

Military Service Bill.

The Military Service Bill was read a second time in the House of Lords on May 18th. In moving the second reading Lord Sandhurst said that the Government had only two amendments to propose. One of these had reference to the recruitment of members of the medical profession. The amendment took the form of the following new clause, which was introduced into the bill in Committee on May 22nd:

Provisions as to Exemption of Medical Practitioners.—Regulations made under the second schedule to the principal Act shall provide for the establishment of professional committees to deal with claims for exemption made by duly qualified medical practitioners; and any application made by such a medical practitioner on any ground, other than that of conscientious objection, for a certificate of exemption shall be referred by the tribunal to whom it is made to such a committee in accordance with those regulations; and the recommendation of the committee on the application shall be binding on any tribunal constituted under the principal Act.

The amendment was accepted, and the bill containing this and other amendments was read a third time and passed on May 23rd. On the motion for the third reading Earl Kitchener made a statement, in the course of which he said that when the bill had received the Royal assent the process of recruiting would be carried out with the minimum possible inconvenience to the men themselves. The idea, he said, had apparently been prevalent in certain quarters that, for some wholly inexplicable motive, the military authorities were prone to crowd and even to congest the ranks with men physically unfit to bear arms. No suggestion could be wider from the truth. The power given under the bill to call up men for medical re-examination would be used not to absorb the physically unfit, but to secure the physically efficient. Some men were undoubtedly sheltering behind certificates acquired in an unsatisfactory way, or under a temporary condition of ill health. The terms of the bill would make it possible to use the men who were discarded on account of physical disability for active service but who were suitable for home service, clerical work, and the like. In a word, the bill made directly and unmistakably for equality of sacrifice in the national cause. The Army Council would use every effort to render it as easy as possible for the men to be called up. The groups would be kept open for voluntary attestation until the appointed date. There was no doubt that the armies in the field would welcome the measure with intense satisfaction. Generals and staffs would be able to count with greater certainty on the necessary drafts for reinforcements, and the rank and file would be encouraged by the thought that all their countrymen at home were prepared to support them to the utmost of their power.

The Lords' amendments were considered by the House of Commons on Wednesday, May 24th. In moving the clause as to the exemption of medical practitioners, Mr. Long said that it was the result of very patient examination by the War Office and representatives of the civil members of the medical profession in this country. The War Office had reason to be greatly anxious as to the provision of medical men for the army without undue depletion of the supply of medical men for civil work at home. The clause was supported by Mr. Rawlinson, but opposed by Mr. King, partly on the ground that doctors were not entitled to a special tribunal of their own profession, partly because the medical men already employed by the army were being wasted by being put to unsuitable work, and in other ways, partly because he did not consider that the Central Medical War Committee was sufficiently representative of the profession, and partly because it was another example of the wild militarism of the Government. Mr. King was called to order by the Speaker, on the ground that his speech had ceased to have any relevance to the clause. The clause was also opposed by Mr. Holt, on the ground that it was an attempt to enable the army to lay hands on doctors more freely than the local tribunals had permitted, and also because medical students had been taken away from their studies in the early days of the war, so that if it went on for another year or so the position would be very serious. He proposed to move an amendment, but was ruled out of order by the Speaker. Mr. Boyton also

opposed the clause, on the ground that the House had not sufficiently clear and definite knowledge of the real opinions of the profession. Sir F. Lowe objected to the tribunals being bound to accept the recommendations of the medical committees, and proposed to leave out the sentence at the end of the clause making this provision. Mr. Whitehouse supported Sir F. Lowe on the ground that it would limit the rights of medical men as compared with the rights of other men to go before local tribunals. Mr. Long agreed that the clause did not give a right of appeal, but it was clear that if a special tribunal was appointed *ad hoc*, there could be no appeal from it to another body which had general powers and was appointed to deal with general cases. The main reason for the clause was that the supply of medical men for military purposes throughout the country had been unequal. In some districts as many medical men had been taken as could possibly be spared; indeed, the margin had perhaps been too nearly approached. In other districts medical men could be spared. There was a strong desire, which did great honour to all concerned, that there should be a definite plan worked out by those who could survey the whole ground, and look not only at the particular case and the particular district, and would endeavour to maintain the supply for the R.A.M.C., and at the same time run no risk of depriving the civil population of the medical attendance they needed. Mr. Ronald McNeill inquired as to the nature of the recommendations to be made, and also appealed for further information. Mr. Charles Roberts, who replied to this appeal on behalf of the Government, said that the medical profession was in an exceptional position; it had special obligations to the civil population, especially that part which was insured. In order that all the circumstances of the medical profession in the various areas might be looked into a special committee of professional men, with local committees in different parts of the country, was a better authority to deal with the problem than a local tribunal, which could not really know the civil medical needs as well as the Central Medical War Committee, which for a year had been carefully watching the enlistment and enrolment of doctors, both from the point of view of the army and of the civil population. That Committee did not represent only the British Medical Association, but had been carefully chosen to represent every section of the medical profession. It could look into the case of each area, and was bound to prevent a breakdown of the medical service, at all events as far as the insured population was concerned. Mr. Pringle opposed the clause on the ground that there was nothing in the case of the medical profession more than other professions which entitled a professional committee to have the absolute decision as to which man in a particular locality should go to the front and which man should be left. He also urged that doctors had been used by the army with reckless extravagance. Mr. J. M. Robertson said that the cases were quite different, for, as a matter of fact, the army did not want lawyers as lawyers, nor shopkeepers as shopkeepers, but it did want doctors as doctors. Those who opposed the clause could not have it both ways: they could not argue that medical men were not to be specially considered or to have a special tribunal any more than any other profession, and then assert that we were in special straits as to the economizing of medical force. The medical body itself, acting locally, and a central body, with knowledge of the whole medical strength of the country, was best able to secure a total economy of the medical forces. He considered that the case for a special medical tribunal to say what persons shall go to the army and who are wanted for professional and not for combatant purposes was a very strong case indeed. After some other members had spoken against the clause the House divided, and the clause was carried by 163 to 42.

We learn that the War Office has decided to recognize, under the Regulations to be made in fulfilment of the above new clause, the three existing professional committees—namely, for *England and Wales*, the Central Medical War Committee (whose offices are at 429, Strand); and the Committee of Reference (appointed by the Royal College of Physicians of London and the Royal College of Surgeons of England); and, for *Scotland*, the Scottish Medical Service Emergency Committee, whose offices are at the Royal College of Physicians of Edinburgh. These committees have already, for some time past, been approved and recognized by the Government in the matter of arranging for the selection of medical men for service as doctors in the naval and military forces of the Crown, and in connexion with the work of the Central Tribunal. We are informed that an Order in Council under the new Clause and Regulations will be issued at once.

In practice the new clause will apply only to medical men who have not enrolled or do not now enrol. Army Council Instruction 485 (SUPPLEMENT, March 11th, 1916, p. 43) directed that after March 31st, 1916, the procedure should be as follows:

(*a*) If a qualified medical practitioner who is attested under the Group System, or is in one of the classes under the Military Service Act, 1916, and who is enrolled under the scheme of the Central Medical War Committee or the Scottish War Emergency Committee, or has been provisionally accepted by the War Office, receives a notice paper calling him up, he should return it to the recruiting officer, together with his certificate of enrolment or War Office letter. The notice will then be cancelled, and the practitioner will remain in reserve until selected for a commission in the Royal Army Medical Corps.

War Taxation and Finance.

The past week has not added much to our knowledge as to the final form of the Government's fiscal proposals for the current financial year. On the occasion of the second reading of the Finance (No. 2) Bill, the Chancellor referred to the hardship imposed on those persons who, receiving income taxed at the source at 5s. in the £, have, under present conditions, to wait until the end of the financial year before they can obtain a part or the whole of the tax so deducted, even though the title to repayment may be clear and indisputable. As a measure of redress, he promised that steps should be taken to provide for repayments in such cases being made half-yearly. The bill contains a clause which has not attracted much comment in the daily press, but which throws an interesting light on the hardships arising from the operation of sharply defined lines of demarcation in a system of graduation. In the absence of special legislation, it is obvious that persons whose incomes just exceed any of the critical amounts—as, for instance, £600 or £1,500—are really worse off after payment of their increased tax than others whose incomes are just below the corresponding limits. The bill therefore introduces a novel principle, which is that a person may calculate his liability as if it did not exceed a particular limit, and pay over to the revenue officials the amount of tax so computed *plus* the sum by which his income does exceed the limit. The clause is certainly an ingenious means of avoiding hardship, but it introduces a complication which will make the calculation of an income tax liability more than ever of the nature of an arithmetical puzzle. It is to be noted that the Chancellor foreshadowed some readjustment of the scales of duty to bring the rates on small earned and small unearned incomes into closer relation with each other. We referred to this point in discussing the text of the bill, and it would now seem that some amendment of the rates of tax had then already been decided upon, if not actually settled.

War.

Invalid Prisoners in Switzerland.—On May 18th Mr. Theodore Taylor asked what steps were being taken to bring into operation the agreement under which British prisoners were being transferred from Germany to Switzerland, and German prisoners from Great Britain to Switzerland. Mr. Tennant replied as follows: "In order that there may be no unavoidable delay, an agreement has just been made with the German Government whereby the selection of those who are unquestionably included in the category of disabilities as justifying transport to Switzerland may be made by the medical authorities of the country where the prisoners are interned. The necessity for the majority of medical men on these selection boards being of Swiss nationality will be waived in this fresh selection. The necessary instructions have been issued." The Foreign Office has since made the following announcement:

In connexion with the transfer to Switzerland of British and German wounded and invalid combatant prisoners of war, whose disabilities do not bring them within the scope of the

agreement for repatriation, the decision whether a prisoner is eligible for transfer rests with medical boards on which Swiss medical opinion will be largely represented. The boards will visit all the camps where British or German combatant prisoners of war are interned, and all such prisoners will have the right to present themselves before the Board.

It will not be possible to bring individual cases to the notice of the Boards in any circumstances.

Medical Officers of Voluntary Military Hospitals.—Captain Douglas Hall asked on May 17th whether, in view of the fact that it was now proposed to give commissions and grant military rank to officers of volunteer corps, the War Office was prepared to grant similar privileges to medical officers in charge of voluntary military hospitals. Mr. Tennant replied that commissions had already been given to all medical men doing work which rendered military rank necessary. It was not proposed to recommend any further extension of the granting of temporary commissions in the R.A.M.C., except under this principle.

Temporary Officers R.A.M.C.—Mr. Joynson-Hicks asked, on May 18th, whether instructions had been issued that the contracts with temporary officers in the R.A.M.C. were not renewed unless the officers were passed fit for general service at home and abroad; and whether officers who were quite fit for home service could be utilized to release others on service abroad. Mr. Tennant's reply was to refer to the answer he gave on February 22nd, which was to the effect that temporarily commissioned officers of the Royal Army Medical Corps under 45 years of age and unfit for foreign service were not permitted to retain their commissions after the period of service for which they engaged had expired. No further commissions were being given to men under 45 years of age unless they were physically fit for active service. It was hoped by these methods to set free men who were physically capable of undertaking general military duties, and who had hitherto been employed in war hospitals in this country, or had been engaged in private practice.

Medical Practitioners' Chauffeurs.—On May 18th Mr. Boyton asked a question as to the difficulty experienced by consulting physicians and operating or consulting surgeons who devoted the whole or part of their time to work at the various military hospitals in getting chauffeurs of non-military age, and inquired whether the War Office would find soldiers to drive the cars of such physicians and surgeons as might apply and be approved. Mr. Tennant said that it would not be possible to release soldiers for this work. He had been told that women drivers had been employed in certain cases, and suggested that this was the solution of the difficulty. At the same time he desired to express his warm appreciation of the valuable assistance which had been given by consulting physicians and operating or consulting surgeons at the various military hospitals.

Position of Officers Resigned.—In reply to Sir C. Kinloch-Cooke, on May 17th, Mr. Tennant said that officers who had been found for various reasons inefficient in the discharge of their duties and had been allowed to resign their commissions became liable, if within the age limit, to be called to the colours under the Military Service Act.

Ration Allowance.—In reply to questions, on May 23rd, the Financial Secretary to the Treasury said that in those cases in which officers, to suit their own convenience, elected to take a money allowance instead of the ration in kind, the cash allowance was reduced in 1915 from 1s. 9d. a day to 1s. 5d. Following on a reduction in the meat ration by a quarter of a pound, the allowance had been further reduced to 1s. 3d.

R.A.M.C. Officers in German Typhus Camps.—On May 17th Mr. Malcolm asked whether the R.A.M.C. officers whose gallant behaviour at Wittenberg had been rewarded by His Majesty were volunteers for that particular work, or were detailed by the Germans to do it; and whether other British doctors in other typhus camps in Germany would be recommended for similar recognition. Mr. Tennant said that the three officers mentioned were detailed by the Germans for duty in the typhus camp at Wittenberg. It might be assumed that if other officers had done equally good work they would receive equal recognition.

Medical Examination of Recruits.—On May 15th Mr. Tennant said that he was inquiring into the facilities afforded to married men for submitting themselves to medical examination in order to ascertain whether their services would be required by the army. The War Office now announces that unattested men who desire can, by appointment, be medically examined by the medical board at the head quarters of the recruiting area in which they reside. It will be necessary for the man to apply by postcard to the recruiting officer nearest his place of residence, so that arrangements may be made for an appointment, and he should wait until he is notified that such arrangements have been made.

Soldiers Physically Unfit.—On May 17th Mr. Cecil Harmsworth asked what was being done to release from service with the colours men physically unfit for any sort of arduous military duty, and whose return to civil employment was desirable in the interests of the army itself and of the trade of the country. Mr. Tennant said that men who were physically unfit for arduous military duty, but who could be usefully employed in the army to relieve men under training to go overseas, were retained in the service for this purpose. At present the number of these lower-grade men was insufficient to relieve from employments and fatigues all the fit men under training. Men who could not usefully be employed in the army were discharged unless they were likely to recover soon. In reply to Mr. Ashley, he added that many women clerks were being employed as substitutes for men in military indoor departments.

Artificial Limbs.—In reply to Mr. Hazleton, who asked whether disabled soldiers provided with artificial limbs would be required to renew such limbs, when worn out, at their own expense, Mr. Forster stated in a written answer, on May 18th, that repairs and renewals of artificial limbs were made at the public expense under the authority of paragraph 418 of the Regulations for the Army Medical Service.

Meat Prices.—In a written answer, on May 10th, Mr. Runciman said that the price of South American beef had risen from 4d. for fores and 6½d. for hinds on August 1st, 1914, to 8⅝d. and 10⅜d. respectively on May 1st, 1916. South American mutton had risen from 3½d. to 9d., and South American lamb from 5⅜d. to 9½d.

THE WAR.

NOTES FROM SOUTH-EASTERN FRANCE.

(From an Occasional Correspondent.)

A Case of Artificial Abscess.

A doctor in charge of a French ambulance relates a case of simulation that has come under his notice which presents several points of interest. A soldier, aged 26, was hospitalized on account of a patch of "eczema" on the site of a former wound represented by a scar on the outer side of the knee. The skin over the affected area was uniformly red and dry, with flakes of desquamated epithelium corresponding to healing pustules, but its appearance at once excited suspicion on account of the sharply-defined edges, which were not raised, and the curiously symmetrical square shape. As, however, this might have been caused by an irritating dressing of some kind no comment was made. A few days later, when the man was about to be dispatched to his regimental dépôt, he suddenly developed another patch of dermatitis over the bursa patellae. The skin was florid, hot, and thickened, and there were a few small blisters filled with pus, without any thickened bases. Fluctuation could be felt, and, on squeezing, a grumous, sanguinolent pus welled out of two minute apertures such as would be made by a hypodermic needle. He was at once accused of having provoked the abscess, and ultimately admitted having injected paraffin. Our correspondent points out that the originators of these artificial abscesses often escape detection, because such cases are rare; it is not until, encouraged by their success, others seek to emulate their feats that suspicion is excited, whereupon close observation reveals the nature of the lesion. The substances employed for this purpose are, in the order of frequency: turpentine, paraffin, and petrol essence. The features to be remarked in this connexion are that these artificial abscesses are curiously painless, there is no glandular enlargement, and little constitutional reaction. The pus is grumous, non-homogeneous, containing much necrosed tissue, and is blood-stained. On evacuation of the pus, healing takes place with remarkable rapidity in the absence of secondary infection. Then, too, the pus, if examined bacteriologically, is found to be sterile. Pus from a paraffin abscess presents the characteristic odour, but from an abscess induced by turpentine or petrol essence the odour is faint. As a matter of fact, however, in the absence of a compromising odour, there is no absolutely pathognomonic sign, merely a group of highly suggestive features, so that a definite conclusion can only be arrived at by police methods, including close observation, inquiry, and exploration of the soldier's belongings (hypodermic syringe, phials smelling of the particular irritating agent, etc.). In view of the very grave consequences

involved by such a charge, it is greatly to be desired that more trustworthy means of chemical or pathological identification could be devised.

A Case of Emotional Mutism.

A robust young soldier was buried by the explosion of a shell at Verdun, and on being disinterred was found to have lost the faculty of speech. He was still mute when received at the inland ambulance a week later, though he understood what was said to him without difficulty, and could reply by signs. When directed to pronounce easy words, as "mamma" and "papa," he did not even move the lips, but with a little perseverance he was induced to whisper them. On laryngoscopical examination the vocal cords were seen to be completely paralysed in extreme abduction, and it was possible to see several tracheal rings. He was apparently quite unable to approximate them in the slightest degree. Judging from the absence of any reaction on the part of the pharyngeal mucosa, in spite of prolonged examination, there was also some anaesthesia. He remained in this state for a fortnight from the date of the traumatism, although on one occasion, not having bolted the closet door, he was startled by the nurse rushing in, which elicited an audible "Oh! pardon, madame." Even so the mutism persisted on his returning to the ward. He was sent to work in the vineyard, where, under the influence of plenty of wine and hard work, speech suddenly returned. This, indeed, is the universal experience—namely, that hard manual work is the best remedy for such functional incapacities of traumatic origin.

The War and the Birth-rate.

In all the belligerent countries, and not improbably in many others, the war is likely to have a disastrous effect on the birth-rate. In spite of the periodical issue of "tickets of leave" to men at the front, and notwithstanding a great, but probably much exaggerated, increase in the number of illegitimate births, the drop is simply tremendous. Evidence of this has been forthcoming from prolific Germany, and a correspondent who discharges the responsible functions of public vaccinator "somewhere in France" shows that the falling off is phenomenal. His observations bear on country parishes far removed from the sterilizing influences of urban life, so that the drop may fairly be attributed to absence of conception. The outbreak of war would naturally not greatly affect the number of infants coming up for vaccination in 1914, the year of the declaration of war, so this year may be taken as the standard. He finds that in a number of hamlets the infants eligible for vaccination in the years 1914, 1915, and 1916 were as follows:

1914.	1915.	1916.	1914.	1915.	1916.
7	4	2	16	10	9
12	4	3	5	2	1
15	8	5	10	6	3
7	1	1	22	13	7
12	9	1			
Total			106	57	32

In the town in which he resides the number of births, which was 173 in 1913, fell to 140 in 1914 and 86 in 1915. Taking the annual number of births in France as 775,000, and assuming that the decrease of vaccinifers corresponds to a paucity of babies, the fall during the year 1915, calculated on the above figures, which may probably be taken as a fair average for the provinces (outside the big towns where the returns are still more unfavourable), would amount to a loss of close upon 350,000, while in 1916 the loss will be not less than 541,000. If to this we add the direct loss of life on the battlefield and the enhanced mortality among the civil population owing to under-nourishment of infants, lack of adequate medical attention, and overwork among women, the sum total must be appalling in its magnitude. Nor is it to be hoped that the deficit will be made up after the war is over, because the immensely enhanced cost of living and the crushing taxation will infallibly make for voluntary sterility. The only consolation for France is that the sterilizing influence will tell on all countries and on all classes alike, though no doubt in variable degrees.

AUSTRO-GERMAN EXPERIENCES.

Two Unfamiliar Fevers.

Obscure Five-day Fever.

In a German field hospital on the east front Professor H. Werner[1] observed thirty-four cases, at first diagnosed as influenza, which subsequently showed a distinctive five-day type of fever. In each bout of fever the temperature rose to 38° to 40° C. for twenty-four hours, but sometimes for forty eight hours. During the three to four days' interval the temperature was steady. After a succession of such bouts the temperature ceased to rise and convalescence set in. The fever was accompanied by headache and pain in the limbs. The spleen was painful and the bones, particularly the tibiae, were tender. The patients were very tired and nervous. The rigor accompanying the rise of temperature was followed by a sense of excessive heat and perspiration, suggestive of malaria. The enlargement of the spleen was hardly demonstrable between the attacks of fever, during which the patients were flushed. In the afebrile interval they were pale and sometimes slightly jaundiced. The pain in the limbs increased during the febrile period and did not completely cease even when the temperature was normal. The micro-organisms of typhoid fever, malaria, and relapsing fever were not found. Possibly this five-day fever was an aberrant form of relapsing fever; and it was presumably identical with the "febris Wolhynica" described by His early in 1916. The following table is an example of the temperature in a typical case:

	A.M.	P.M.
December 25th	*36.4° C.*	*39.4° C.*
December 26th	36.9° C.	37.1° C.
December 27th	36.6° C.	37.0° C.
December 28th	36.5° C.	36.9° C.
December 29th	36.7° C.	37.0° C.
December 30th	*37.2° C.*	*39.5° C.*
December 31st	37.3° C.	36.7° C.

Gaiter-pain Fever.

Under the heading "Gaiter Pain" several Austrian writers have described a condition the most characteristic feature of which was severe pain in the shins. More than 200 such cases were observed by Dr. A. Grätzer[2] alone, from December, 1914, onwards, when his battalion was stationed on the Nida. In conjunction with Dr. Zanko he found that this "gaiter pain" was only one symptom, among many others, of a condition to which they gave the term "influenza polonica." The onset of the disease was acute, the temperature being sometimes over 40° C. at the outset. Severe headache was accompanied by stabbing pain in the region of the left costal arch, by great exhaustion, and frequently at first by constipation. Apart from the high temperature and considerable enlargement of the spleen, there was little objective evidence of disease. The spleen was strikingly hard, its lower border was sharply defined, and it was very tender. Herpes labialis was observed in a few cases. After three to four days, when the temperature had fallen below 38° C. and the headache had almost ceased, pain developed on the inner surface of the tibiae, of equal intensity on both sides. It was variously described as dragging, compressing, and throbbing. Its intensity was moderate in the morning, greater in the afternoon, and often unbearable at night. During the next few days the temperature became subfebrile or normal, and the spleen smaller and less tender. Large doses of salicylates and complete rest were alike useless, and it was only with a combination of morphine and veronal that a few hours' sleep could be secured. The disease sometimes lasted four to six weeks, during which the intensity of the pain showed slight variations, and the temperature was normal, or almost normal. At the end of this period improvement or recovery occurred, but in most cases during the following months there were frequent relapses accompanied by only slight rises of temperature, and hardly ever by any swelling of the spleen. The duration of a relapse was seldom as long as three weeks, but the pain was, as a rule, just as severe as at the first attack. Dr. Grätzer found large doses of quinine, given over a long

[1] *Muench. med. Woch.*, March 14th, 1916.
[2] *Wien. klin. Woch.*, March 9th, 1916.

period, shortened the course of the disease, and in many cases aborted relapses. The majority of the patients had never worn any kind of gaiter, and only in the case of an officer did the distribution of the pain coincide with the area covered by his gaiters. The disease was equally prevalent in marshy and in healthy districts; and while most of the cases occurred during the cold seasons, some of the worst were observed during the fine weather in June and July, 1915. The disease had certainly nothing to do with the wearing of gaiters, and it showed no definite relation to seasonal or local factors. It was certainly infectious, but the mode of its transmission from one patient to another was not ascertained, though Dr. Grätzer was inclined to suggest that it was conveyed by lice, as it flared up more frequently in some companies than others, although the whole battalion was living under the same sanitary conditions. The rarity with which officers developed this disease pointed in the same direction. The disease died out when the soldiers were on the march and slept in the open.

CASUALTIES IN THE MEDICAL SERVICES.

Army.

Killed in Action.

Captain Arthur Cyril Albert Jekyll, R.A.M.C., was reported as killed in action, in the casualty list published on May 20th. He was educated at Sydney University, where he graduated M.B.; he joined the army as a temporary lieutenant on March 15th, 1915, and was promoted to captain on completion of a year's service. He was attached to the Royal Scots, who lost nine other officers in the same casualty list—four killed, four wounded, and one missing.

Wounded.

Captain H. A. Pallant, R.A.M.C., temporary.
Lieutenant W. J. E. Stuttaford, R.A.M.C., temporary.

Deaths among Sons of Medical Men.

Crawford, A. B., Captain West Yorkshire Regiment, son of Dr. A. D. Crawford, of Stanton Hill, killed in action, was educated at Oundle School, and was in practice as a solicitor at Boston. When the war began he enlisted in the Lincoln Regiment, and got a commission in the 14th service battalion of the Notts and Derby Regiment (Sherwood Foresters) on February 15th, 1915. He was a well-known cricketer, having played for both Notts and Warwickshire, and once made 51 against the Australians at Trent Bridge.

Daunt, Giles V., Second Lieutenant South Lancashire Regiment, youngest son of Dr. F. E. H. Daunt, of Clapham Road, London, S.W., killed in action on April 9th. His commission was dated December 29th, 1914.

Madge, Charles Albert, Lieutenant-Colonel South African Imperial Force, fourth son of the late Henry Madge Madge, M.D., of Upper Wimpole Street, killed on May 10th, aged 41. He was educated at Westminster, and went to South Africa with his regiment, the Royal Warwickshire, in 1900, served through the South African war, took part in the advance on Pretoria, was mentioned in dispatches, and gained the King's and Queen's medals with five clasps. In 1902 he was seconded for service under the Colonial Office, and in 1904 joined the Transvaal Consolidated Land and Exploration Company, and settled at Johannesburg. He served on the head quarters staff of General Botha in the campaign in German South-West Africa, and was mentioned in dispatches. On the conclusion of that campaign he came to Europe, and when killed was attached to the staff of a division. In 1910 he married Barbara, youngest daughter of Mr. H. Hylton-Foster, of Foxbury, Dorking, and Tolworth Hall, Surrey; and leaves a widow and two sons.

Mathews, R. H. F., 12th Yorkshire and Lancashire Regiment (Sheffield Battalion), in his 21st year, the second son of Dr. R. H. Mathews of Sheffield. He was educated at King Edward VII School, and had completed his first year as a medical student of Sheffield University, having obtained a scholarship. He joined immediately after the declaration of war.

Mitchell, Arthur Gorman, Second Lieutenant Royal Irish Rifles, son of Dr. A. B. Mitchell, of Belfast, killed in action, aged 19. He was educated at Campbell College, Belfast, and at Queen's College, Belfast, where he was studying medicine, and was a member of the O.T.C. He got his commission on May 8th, 1915.

Owen, Bruce Lloyd, Lieutenant-Commander R.N., fourth son of the late Dr. Lloyd Owen of Southsea, died at Newcastle-on-Tyne on May 16th. He attained that rank on June 30th, 1911, and was acting as commander at the time of his death.

Vardon, Evelyn F. Claude, Second Lieutenant Royal Dublin Fusiliers, only son of the late Dr. Evelyn Vardon, M.D., killed in action on May 12th, aged 36. He got his commission last July.

NOTES.

Mr. T. Young Simpson, F.R.C.S., of Plymouth, has been appointed Chirurgien Chef to the Hôpital Anglais 249 bis, Rhône, France. The hospital has 300 beds.

A committee of American surgeons and dentists has issued an appeal for funds to establish another special hospital in France for the treatment of wounds of the face and jaw. Accommodation for 500 patients is to be provided, and many well-known surgeons have offered their services. The French Minister of War has agreed to place a suitable building in Paris at the disposal of the promoters, and the American Red Cross will furnish supplies.

Brighton Hospital for Officers.

Baths for the *eau courante* treatment of injuries of the arm and leg have been installed in connexion with the Red Cross Auxiliary Hospitals for Officers, Brighton. The apparatus was generously presented by H.R.H. the Princess Royal.

The Kut Garrison.

Mr. Edmund Candler, representative of the British Press with the Expeditionary Force in Mesopotamia, writing from the Mesopotamian front on May 9th, gives some account of the sufferings of the garrison at Kut, based on information given to him by four officers who had been in hospital there. The real privations of the garrison began in the middle of February. When the milk gave out the hospital diet was confined to corn-flour or rice water for the sick and ordinary rations for the wounded. On April 21st the 4-oz. grain ration gave out, and from April 22nd to 25th the garrison subsisted on the two days' reserve ration issued in January, and from April 25th to 29th on supplies dropped by aeroplane. The rations were supplemented to a certain extent by fish caught in the river. During the last days of the siege eight deaths were occurring daily among the British and twenty-one among the Indians. All the artillery horses and transport animals were killed for food, and mule flesh, it was said, was generally preferred to horse. Fortunately just before the force was besieged in Kut a large consignment of warm clothing had been received from the British Red Cross Society. This probably saved many lives, as the garrison had only the summer kit they stood up in. In addition to the four British officers, about six Indian officers, 100 British rank and file, and 963 Indian soldiers and followers were brought down from Kut in hospital ships, Turkish prisoners being given in exchange.

British Red Cross Manuals.

We are indebted to Mr. Hastings, secretary of the British Red Cross Society, for a set of the manuals[1] issued by the society at the price of 1s. each. No. 1, *First-aid Manual*, No. 2, *Nursing Manual*, and No. 3, *Training Manual*, are by Mr. James Cantlie, Honorary Surgeon-Colonel, R.A.M.C.(T.F.). They were all first published three or four years ago and are well known; since the war began they have been reprinted on many occasions. No. 4, *Hygiene and Sanitation Manual*, is by Lieutenant-Colonel S. Guise Moores, and was first published in January, 1914; it has been twice reprinted. It bears as motto the very true aphorism of Florence Nightingale: "You cannot improvise the sanitary care of an army in the field." All these manuals are well illustrated, coloured plates being inserted where necessary. No. 5, *Cookery Manual*, published last year, is by Mr. C. Herman Senn, and is intended for the members of voluntary aid detachments who undertake commissariat or kitchen duties, or who act as cooks. It consists for the most part of selected recipes, but contains notes on the preparation of camp kitchens, on the care of camp stores, on water supply, and on emergency utensils, including appliances for so-called fireless cooking.

German Casualties.

An official announcement of the German casualties, as reported in German official lists, puts the total German losses from the beginning of the war to the end of last month at 2,822,079. This number includes corrections. The enemy losses during April (exclusive of corrections) numbered 91,162. The details are as follows:

	April.	Total.
Killed and died of wounds	17,455	664,552
Died of sickness	2,395	41,325
Prisoners	1,221	137,798
Missing	6,217	197 034
Severely wounded	14,557	385,515
Wounded	4,001	254,627
Slightly wounded	39,679	1,023,212
Wounded remaining with units ...	5,537	117,956
	91,162	2,822,079

The above figures include all German nationalities—Prussians, Bavarians, Saxons, and Würtembergers. They do not include naval casualties or casualties of colonial troops.

Information has been published in France to the effect that the total casualties among officers in the German army number 71,857, including:

Killed...	22,636
Wounded	43,334
Missing	3 762

[1] Published for the British Red Cross Society by Cassell and Co., Ltd., London, New York, Toronto, and Melbourne. 1915. (1s. net.)

England and Wales.

HEALTH CONDITIONS IN LONDON.

THE rise in the price of milk in London is generally believed to be in excess of what the economic conditions require. The price used to be 4d. a quart; it was then advanced to 5d., and is now 6d. in many districts. It is alleged that there is no scarcity of milk, that the recent rise in price is not justified by the conditions of the industry, and that it has merely resulted in greatly increasing the profits of farmers and milk dealers, probably mainly the latter. There can be no doubt that the rise has aggravated the problem of the artificial feeding of infants among the children of the poor, but it is satisfactory to find that the Board of Trade is making inquiries, which, we hope, may result in early action, for with the recent plunge into summer weather the problem is becoming acute. Another matter affecting the health of persons of all ages is also to be the subject of official inquiry. It has been stated recently that several metropolitan borough councils propose to abandon street watering during the summer in the interests of economy. The President of the Local Government Board informed the House of Commons on May 22nd that his medical advisers do not endorse the proposed policy, although he thought they would probably agree that there were cases where the amount of watering done in ordinary times might be reduced without risk. This may be so, although the experience of dry summers does not seem to make it probable. It would have to be shown that the total economy was very considerable in order to justify the stoppage of watering, more especially along routes much frequented by motor omnibuses and lorries. Apart from the discomfort inflicted on individuals at all sensitive to dust, and the extra domestic work caused by the inrush of dust through every open window, there is good reason to believe that dust is often the carrier of pathogenic organisms, especially of those which produce catarrhs of the upper respiratory passages. There is, indeed, a suspicion that recent outbreaks of acute anterior poliomyelitis may have been due to infected dust, and the fact that the county councils seem to be abandoning the tarring of the surface of many of the main thoroughfares out of London increases the importance of the whole matter. In reply to another question in the House of Commons Mr. Long said that the number of infant deaths in London and the large towns was this year below the average of the five preceding years and the infantile death-rate for London itself for the first quarter of 1916 was lower than that of the corresponding quarter during each of the last ten years; it has, however, to be remembered that the first quarter of this year was abnormally cold and wet. Mr. Long added that the Local Government Board was taking active steps, and with much success, to induce local authorities to adopt and carry out comprehensive schemes for maternity and child welfare, and that such schemes were already at work in nearly all the large towns and throughout a number of the counties. This general statement, however, does not meet the particular cases of the increase in the price of milk in London and the probable increase in the amount of dust in the air should the watering of streets and roads or their adequate tarring be suspended.

THE SYPHILIS DEPARTMENT OF THE LONDON HOSPITAL.

We published in December, 1913, a fairly full account of the scheme for the establishment at the London Hospital of a special department for the treatment of syphilis, and in February, 1914, we were able to announce that the Grocers' Company had generously promised to provide the necessary indoor accommodation at the cost of £7,000 to £10,000. It was then determined to add another floor to the existing isolation block, the cost of which, owing to structural difficulties, amounted to £10,000. The building was delayed on account of the war but was completed by the end of 1915. Owing to financial stringency it was at first proposed to postpone opening the department until the end of the war; but, in view of the great increase in the number of patients presenting themselves for treatment, the House Committee determined to open it on March 1st, 1916. It provides eight beds for men and eight for women in separate rooms, with bath-rooms and accommodation for sister and nurses, as well as a well-equipped laboratory for clinical investigations. It is worked in connexion with the skin department of the hospital, and is intended specially for the treatment of syphilis in the acutely infective stage. The President of the Local Government Board has taken a great interest in the work, and recently paid a visit to the department, which fulfils in all respects the recommendations of the Royal Commission on Venereal Diseases.

MEMORIAL TO THE LATE DR. FREDERICK LAWRANCE OF HAMMERSMITH.

On Sunday afternoon, May 21st, the Bishop of London, at a service in St. Peter's Church, Hammersmith, dedicated a chime of bells and unveiled a marble tablet which had been subscribed for by friends and patients of the late Dr. Frederick Lawrance, who died in his 85th year on May 1st, 1915. A medallion portrait of him is carved upon the tablet, and beneath it is an inscription referring to his attendance at the church for over fifty years, to his services as churchwarden since 1906 until his death, and to his practising in the neighbourhood for over half a century. After the bells had been blessed a short peal rang out from them, and the tablet was unveiled. The bishop, in an eloquent address, spoke of the supporting influence of the Christian faith to the community at home as well as at the front, and the purging effect of the war. In the course of it he several times referred to "our dear old friend." Besides the clergy engaged, Sir William Bull, M.P., the Mayor and Corporation of Hammersmith, and many friends and patients of the late Dr. Lawrance were present at the service. There were among them soldiers, in hospital dress back from the front, some in khaki, and a guard of honour formed by the St. Peter's Company of the Church Lads' Brigade.

TREATMENT OF SCHOOL CHILDREN IN LIVERPOOL.

The city council has finally decided to take measures to secure efficient treatment of school children suffering from adenoids and tonsillar affections. There was some slight opposition to the recommendation of the Education Committee on the ground apparently that it was thought that such treatment did not come within the purview of a committee whose object was solely educational. There also was not absent a feeling that parents might have a conscientious objection to such treatment as being an infringement on their rights. The recommendation was, however, approved and a clinic will shortly be established, and one more step towards medical treatment as a natural corollary to medical inspection under municipal control has been taken. At present nothing has been done for the treatment of diseases of the skin in school children, and that, it is considered, should be the next step.

LIVERPOOL ROLL OF HONOUR WEEK.

During the week May 7th–13th the Lord Mayor of Liverpool made an appeal to all classes of the community with the object of establishing a fund for the widows, orphans, and dependants of Liverpool men who fall in the war. The medical profession, through the Liverpool Medical Institution, has contributed £600, free from any deduction connected with collection. This sum is regarded as most satisfactory when it is considered that many medical men are away on active service. Mr. William Jones, the resident librarian, was untiring in his efforts for the fund, and his services deserve to be placed on record. Down to May 22nd the city's Roll of Honour Fund amounted to £52,586 5s. 4d.

Scotland.

THE plans for the Royal (Dick) Veterinary College, Edinburgh, have been completed by the architect, Mr. D. M'Arthy. The front portion of the building will provide for the teaching and administration, and will contain laboratories, lecture theatres, and a hall to seat three hundred persons, as well as a museum, photographic rooms, students' reading and smoking rooms, and rooms for the professors. The clinical department, which will be in the rear part of the building, has been designed for the treatment of all kinds of animals, there being special

accommodation for horses, cows, and sheep, wards for dogs and cats with enclosed runs, and operating theatres for large and small animals respectively. X-ray and photographic rooms will be provided for both departments.

It was announced in the Journal of April 1st, p. 503, that an assistant county medical officer and tuberculosis officer had applied to the tribunal for the Lorn district for exemption from military obligations on the ground that he believed war to be morally wrong and indefensible, and that he was unwilling even to serve in the R.A.M.C. The tribunal refused the application, and an appeal to the Argyllshire Appeal Tribunal has been dismissed.

Hospital for Maimed Soldiers and Sailors.

Good progress is being made with the establishment of the Princess Louise Scottish Hospital for Soldiers and Sailors. A house was placed at the disposal of the committee for the period of the war and twelve months afterwards by Mr. Thomas Aikman, with the option of purchasing the house and certain land about it on moderate terms. The committee did not consider it advisable to spend any part of the money subscribed by the public in acquiring land, but a citizen of Glasgow (who remains anonymous) has arranged to purchase the house and about 350 acres of land and to present it to the committee. The offer was gratefully accepted on May 16th. It was made through Mr. William Guy, one of the honorary secretaries, 146, Buchanan Street, Glasgow.

Maternity and Infant Welfare Scheme for Dundee.

The Public Health Committee of the Dundee Town Council at its meeting on May 18th adopted a scheme for maternity and child welfare centres. The convener, Mr. Simon Fraser, said that the record of infant mortality in Dundee during the last twenty years put the city in a most unenviable position. It was the worst in Scotland, and last year had been particularly disastrous. The scheme provides for the extension of the system of visiting mothers by the appointment of additional health visitors, who would also visit homes from which measles and whooping-cough were reported, and advise the mothers as to the measures necessary for the prevention of the spread of these diseases and of their complications. The M.O.H. is empowered to engage trained nurses temporarily for the work of visiting all infected homes whenever the necessity arises, and the Local Government Board for Scotland is to be asked to make the notification of measles and whooping-cough compulsory, as it is in England. The medical staff of the Royal Infirmary is to be asked to institute pre-natal clinics in connexion with the Maternity Hospital. It is intended to co-operate with the Infant Welfare Committee of the Social Union in attending to the health of expectant and nursing mothers and providing baby clinics and baby hospitals. A central institution for maternity and child welfare will be established where the inspector of midwives and the lady health visitors will reside. In addition there will be three baby clinics in different parts of the city. Dr. Templeman, M.O.H., said that it was desirable to place at the head of the work a medical woman who would be required to devote her whole time to it. She would get into touch with the cases reported by the health visitors, so that there would be continuity of treatment. The estimated cost of the scheme for the first year is about £1,000.

Canada.

The International Joint Commission.

A meeting of the International Joint Commission on Boundary Waters was held at Washington, D.C., on March 8th and 9th, to consider the final report on the engineering investigations which have been made during the past year. The Commission consists of three members from Canada and three from the United States, and is a permanent tribunal for the adjustment of boundary matters between the two countries under the terms of the treaty between Great Britain and the United States of January 11th, 1909, which states that "the waters therein defined as boundary waters and the waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." In 1913, as the result of complaints that the terms of this treaty were being violated, the Commission was asked to determine whether or not this was so, and, if it was, to what extent, at what points, and by what causes; and, secondly, to report on the remedies considered advisable. In January, 1914, a progress report was published, which stated that the boundary waters were grossly polluted to the detriment of the public health; in the Great Lakes, however, the pollution was found to be confined to the shore fronts. This part of the inquiry was conducted under the direction of Dr. Allan J. McLaughlin, of the United States Public Health Service, with whom were associated Dr. J. W. S. McCullough, Dr. J. A. Amyot, and F. Dallyn, of the Provincial Board of Health of Ontario. The second part of the inquiry is in the hands of Professor Earle B. Phelps, consulting sanitary engineer, who has just completed his report.

The Canadian Red Cross Society.

At the annual meeting of the Canadian Red Cross Society in the Convocation Hall of the University of Toronto, when the Duke and Duchess of Connaught and the Princess Patricia were present, as well as the Lieutenant-Governor of the Province and Lady Hendrie, the chair was taken by the President of the society, Surgeon-General G. Sterling Ryerson, who expressed to Her Royal Highness the Duchess of Connaught the desire of the members that she should become its president. This she graciously agreed to do. Favourable comment on the work of the society was made by His Royal Highness, who also expressed his satisfaction with the harmonious relations existing between that body and the St. John Ambulance Association and Brigade. The society is to be congratulated upon having as its president the Duchess of Connaught, who ever since the commencement of the war has shown the greatest interest in its work. General regret, however, is felt upon the retirement from the presidential chair of Surgeon-General Sterling Ryerson, to whom the society owes its inception. The Canadian branch of the British National Society for Aid to the Sick and Wounded in War was founded in 1896, and was incorporated under its present name in 1909. Its success has been due in large measure to the active support and unfailing energy of such men as Surgeon-General Ryerson and the late Lieutenant-Colonel Jeffrey Hale Burland. As a mark of appreciation of the services rendered to the society by Surgeon-General Ryerson during his two years' occupancy of the presidential chair, the following resolution was passed unanimously at a meeting of the Central Council on February 1st:

> That on the retirement of Surgeon-General George Sterling Ryerson from the office of president of the Canadian Red Cross Society in order that the society may be honoured by H.R.H. the Duchess of Connaught graciously accepting that position, the Council desire to place on record an expression of appreciation of the long and active service of General Ryerson in connexion with Red Cross affairs and administration in this country. As the original promoter of the foundation of the society in Canada, as chairman of the Executive Committee, as the Special Commissioner to South Africa representing the Canadian Red Cross Society during the Boer war, and as the president of the society for the last two years, he has all through been a leader in Red Cross work, and has evinced great enthusiasm as well as ability in serving the society. The Council further expresses the hope that Surgeon-General Ryerson's close connexion with the society and the administration of Red Cross work will long continue, so that we may have the benefit of his great experience and familiarity with Red Cross matters generally.

It will be remembered that Mrs. Ryerson lost her life in the *Lusitania* disaster. Miss Laura Ryerson, who also was on board, has been made Lady of Grace of St. John of Jerusalem, in recognition of her "courage, fortitude, and unselfish devotion in the *Lusitania* disaster." Miss Ryerson was thrown into the water from one of the boats. She swam about for three hours, during which time she went down twice. Finally she succeeded in reaching a raft on which one member of the crew was standing. He pulled her out of the water. Subsequently they caught a lifeboat, which was drifting past, and with it saved the lives of many of the women who were clinging to preservers. All of the women, with the exception of Miss Ryerson, collapsed when they were taken from the life-

boat by the destroyer. Miss Ryerson undressed the women, wrapped them in blankets, and took care of them.

Correspondence.

IN MEMORY OF THE THREE BRAVE DOCTORS WHO DIED AT WITTENBERG.

SIR,—Many of us must feel deeply that some memorial should be put to the memory of the three brave doctors who died at Wittenberg camp of typhus fever while doing their utmost to alleviate the terrible suffering and misery of which we have all read with a thrill of horror from the reports of Major Priestley, R.A.M.C., and Captains Vidal and Lauder.

His Majesty has voiced all our wishes by the honours he has graciously bestowed on these gallant men who mercifully survived, and we now feel that the names of those who died—Major W. B. Fry and Captains A. A. Sutcliffe and S. Field—should be remembered in the years to come. I think all will agree that if possible the memorial should take the form of helping to alleviate suffering and do some permanent good, but that must necessarily depend on the amount received. I will gladly receive and acknowledge the smallest sums, as I feel all men and women will wish to join in honouring the memory of such men.—I am, etc.,

CONSTANCE PARKER OF WADDINGTON.

Aldworth, Haslemere, May 20th.

HOW MEDICAL WRITINGS MAY BE GIVEN A MARKED DEVELOPMENT.

SIR,—Dr. Mercier has gone to considerable trouble and taken up valuable space in abusing medical writers in general merely on account of a passage in which the word "marked" is used so frequently and at such short intervals as to render the passage as unnecessarily tautological as such repetition is ridiculous. Dr. Mercier, however, seems totally unaware of the fact that the verb "to mark" and its adjective, "marked," are perhaps as capable of as many shades of meaning as any words in the language. A few minutes' study of any good dictionary should convince him of this. Dr. Mercier has therefore no right to take upon himself the attempt to limit either adverb or adjective to their most primitive meaning—that is, to mark as with a line or dot, a fact which he plainly infers in the following sentence: "If he wishes to say that a rash is copious let him say that it is copious and not that it is marked, which it is not." The word "copious" is only adequate in the case of a rash when the rash is diffuse, or distributed widely over the surface. It does not convey the same meaning as to intensity as the word marked does. We can say slightly marked, deeply marked, well marked. The word copious, on the other hand, has no such flexibility, being too closely bound to the superlative degree to be capable of modification by adjectives or adverbs to the extent which may be required, and hence is totally inadequate as a substitute.

If Dr. Mercier will go to the trouble to look up the word "development" in the *Imperial Dictionary*, vol. ii, he will find the following definition: "The exhibition of new features; a gradual growth or advancement through progressive changes." Surely Dr. Mercier must admit that there could be no better justification than this definition for the use which the majority of the best medical writers make of this word, and its verb and its adjective, whether in connexion with pneumonia or cancer or any other pathological change. Dr. Mercier should have remembered that the verb "develop" has both a transitive and an intransitive meaning, and that the transitive meaning is of far wider application than its mere connexion with a certain process in photography, and that it was used in a transitive sense long before photography was ever thought of or heard of.

I would like also to point out that the expression "he was given a pill," whatever its faults may be, is far less offensive to an educated intellect than the somewhat vulgar and meaningless combination "sloppy English." Had the costermonger's adjective been substituted for the word "sloppy" the expression would have conveyed neither more nor less meaning. Such an expression, to adopt the phraseology which Dr. Mercier considers more elegant or intelligible than "markedly worse," is "a thundering sight worse" than anything we have been accustomed to see in the BRITISH MEDICAL JOURNAL.—I am, etc.,

Liverpool, May 21st. WILLIAM BRAMWELL.

SIR,—I think Dr. Mercier errs in attributing to Tennyson the words, "Evil is wrought by want of thought as well as want of heart." They certainly occur in the *Lady's Dream*, by Hood, and I cannot remember them in any of Tennyson's writings. I am glad of the opportunity of saying that gratitude is due from us to Dr. Mercier for his plea on behalf of greater clearness in medical writings, and for clearness of thought in general. Slipshod speech and slang expressions are constantly being thrust upon the better educated by the less educated class, and it is to be feared that the tendency of many educational reformers will not be in favour of purity of speech and writing. All the more honour to Dr. Mercier!—I am, etc.,

May 22nd. M.D.

THE MEDICAL OFFICERS MERCANTILE MARINE.

SIR,—1. In my opinion no shipping master in any British port should enter the name of any medical officer on a ship's articles without a certificate from the medical officer of the *local* port sanitary authority that he has verified the status of the medical officer and communicated the name to the Registrar of the General Medical Council in London for entry on a temporary list of medical men employed in the mercantile marine—to be kept by the General Medical Council.

2. When a mercantile company discharges a medical man from its employment it should send in his name to the medical officer of the port sanitary authority, so that this official may inform the Registrar, General Medical Council, of the occurrence.

3. When a medical man has served six months at sea he should be permitted to go through a course of instruction in naval hygiene at the Royal Naval classes for medical officers, R.N., at Greenwich, and, if successful, get a commission in the Royal Naval Reserve, as do the ordinary deck officers of the mercantile marine. The only way that I can see to give protection and defined status to the medical officers, mercantile marine, is by following some such lines as these. The cost to the State would not be greater in proportion than is the cost of training the ordinary Royal Naval Reserve deck officers, and in a similar way a war reserve would be developed for the Royal Navy.

4. The cry of the ship surgeon class for just conditions cannot be longer ignored.—I am, etc.,

GEORGE J. H. EVATT, M.D.,

London, S.W., May 19th. Surgeon-General.

THE INDIAN MEDICAL DEGREES BILL.

SIR,—In the report of the annual meeting of the Bombay Medical Union that appeared in your issue of April 29th (p. 632), I was very pleased to notice that the members of that union held an open mind as regards the Government recognition of the Yunani (Musalman) and Ayurvedic (Hindu) systems of medicine. While in India about two years ago I was much impressed with the good work carried on by many Ayurvedic physicians, some of whom are qualified men with medical diplomas from the Indian universities. The Ayurvedic colleges in India are training men in anatomy, physiology, pharmacy, and medicine, and are doing research work by translating Sanskrit medical works and reinterpreting them in the light of modern medical science. When I drew the attention of Lord Pentland, the Governor of Madras, to the scientific work carried on by the Ayurvedic colleges in Madras, His Excellency showed his sympathy by his visit to the college. Any indigenous attempt to bring together the European and Indian medicine ought to be welcomed by all well wishers of India. For it is only by this way that the great mass of the Indian people will take kindly to Western medicine and a lasting union between England and India will be made. It is therefore I plead that the work of the Ayurvedic colleges should be encouraged and should find recognition in the Medical Degrees Bill now before the Indian Government.—I am, etc.,

Wells, May 7th. C. MUTHU.

TREATMENT OF CHLORINE GAS POISONING.

SIR,—I have not noticed that it has occurred to any of the R.A.M.C. men at the front to try the effect of venesection in acute poisoning by chlorine gas. It appears to me, seeing that the fatal effects are due to obstruction in the pulmonary circulation and oedema of the lung tissue, that copious blood-letting is the only remedy which could be expected to produce any immediate effect. It is at any rate worth trying, if it can be applied soon enough.—I am, etc.,

Edinburgh, May 24th. E. A. SCHÄFER.

THE SPELLING OF "NEURON" AND "AXONE."

SIR,—I have to apologize for an error of confusion in my review of Gaskell's *Involuntary Nervous System* in last week's issue of this JOURNAL. While the "*o*" in "axone" is clearly long (*ἄξων*) that in *νεῦρον* is, of course, short. It is only, therefore, for the sake of uniformity if the final "*e*" is added to "neurone." On the whole, perhaps, as Professor Sherrington has suggested to me, it would be better if neurologists agree to spell "axone" with the "*e*" and "neuron" without it. The latter word should, of course, be pronounced as if ending in the preposition "*on*."—I am, etc.,

University College, W.C., May 22nd. W. M. BAYLISS.

Universities and Colleges.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council was held on May 11th, when Sir Watson Cheyne, President, was in the chair.

Diplomas.

Diplomas were given to ninety-nine candidates found qualified for the Membership of the College at the recent examinations.

The Cartwright Prize.

The subject for this prize for the period ending December 31st, 1920, is, "The treatment of injuries of the jaws, and the restoration by mechanical means of parts of the jaws lost as a result of injury, or removed on account of disease." The prize consists of a bronze medal and an honorarium of £85, and is open to persons engaged in the study or practice of dental surgery, and possessing qualifications capable of registration under the Medical Acts of the United Kingdom. (A diploma or licence in dental surgery, without a medical or surgical diploma or degree, will not be a sufficient qualification.)

In reference to a letter from a correspondent published last week criticizing the present arrangements for the election of the Council of the Royal College of Surgeons, we are informed that the President and Council are not empowered to arrange for any temporary modification of the rules, and that the alteration of a by-law is a lengthy and complicated procedure.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

THE following have been admitted Fellows: Dines Chandra Chakravati, W. W. Hoare, G. R. Livingston, A. C. Sandstron, N. F. Sinclair, H. M'L. Staley, Muhammed Abdul Wajid.

The Bathgate Memorial Prize in materia medica, consisting of bronze medal and microscope, has been awarded to Miss Marguerite R. Sterling.

The Ivison Macadam Memorial Prize in chemistry, consisting of bronze medal and set of books, has been gained by Miss Janet Grant.

SOCIETY OF APOTHECARIES OF LONDON.

The following candidates have been approved in the subjects indicated:

SURGERY.—†H. H. Bailey, *†A. Glen, *H. M. Hobson, *†E. G. D. Murray.

MEDICINE.—*†H. H. Bailey, *†P. C. C. Fenwick, *R. F. Jarrett, *E. G. D. Murray, *†L. F. Pain, *†M B. M. Tweed.

FORENSIC MEDICINE.—R. F Jarrett, L. A. B. Moore, E. G. D. Murray, A. W. North, L. F. Pain.

MIDWIFERY.—M. Dwyer, H. T. Lamb, E. A Leak, A. W. North, S. L. Szpigner, M. B. M. Tweed, H. St H. Vertue.

* Section I. † Section II.

The diploma of the Society was granted to Messrs. M. Dwyer, A. Glen, A. W. North, and L. F. Pain.

THE United States Government's "safety first" train left Washington, D.C., on May 1st, on an educational tour through all parts of the United States. It carries hundreds of exhibits illustrative of the methods employed by the Federal Government for saving human life and property. It is believed that the number of deaths and injuries from accidents can be reduced by one-half through "safety first" methods.

Medico-Legal.

SENTENCE FOR PRETENDING TO BE A QUALIFIED PRACTITIONER.

ACCORDING to a report in the *Scotsman* for May 17th, a young man named George Bowie Farquhar was charged before the sheriff of Linlithgow on May 16th with having pretended to Dr. W. T. Lindsay, of Blackridge, that he was a duly qualified medical practitioner, and thus inducing Dr. Lindsay to engage him as locumtenent, and to pay him £6 5s. a week for a period of six weeks and three days. The accused pleaded guilty. It was stated on his behalf that he had a knowledge of chemistry, had taken some preliminary examinations in medicine, and despite the want of qualification had given satisfaction. The sheriff said that he would not be doing justice in the public interest if he failed to impose the highest sentence in his power, which was imprisonment for three months.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Deputy Surgeon-General D. J. P. McNabb and Fleet Surgeon J. F. Hall have been appointed respectively Deputy Director-General and Assistant Director-General of the Medical Department of the Admiralty.

EXCHANGES.

LIEUTENANT R.A.M.C.T., with considerable surgical experience, is anxious to be transferred to a casualty clearing station, preferably in the Southern Command. Address, No. 2050, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

M.O. to Divisional Train, Army Service Corps, probably at home for some time, desires immediate exchange with M.O. in 50th Division abroad.—Apply No. 1950, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Obituary.

WE regret to announce the death, on May 12th, of Dr. JOHN HEPBURN LYELL of Perth. He had been in indifferent health for some months. He was a native of Newburgh, Perthshire, was educated at Perth Academy, studied medicine at St. Andrews and Glasgow Universities, and graduated M.B., C.M. in 1896 and M.D. in 1901. Dr. Lyell was closely identified with Perth and its institutions. He was for a period house-surgeon to the Royal Infirmary, and after he commenced practice was appointed one of the visiting physicians to that institution, acting also as medical electrician and radiologist. Dr. Lyell was assistant medical superintendent to Perth Prison. He took a keen interest in the affairs of the British Medical Association, and was secretary to the Perth Branch for some years; he was also joint secretary to the Local Medical and Panel Committees of Perth and Perthshire. A keen lover of science, he was identified with the Perthshire Medical Science Society, and contributed several papers on scientific subjects. Dr. Lyell is survived by a widow and three children, to whom the sympathy of a large circle of friends will be extended.

DR. JAMES BRUCE RONALDSON, who for many years practised in Haddington, died in retirement at his residence in Colinton, Midlothian, on May 17th, aged 65. He received his professional education at Queen's College, Belfast, Dublin, and Edinburgh, and took the diplomas of L.R.C.P. and L.R.C.S.Edin. and L.A.H.Dubl. in 1874. In 1884 he became F.R.C.S.Edin. and in 1890 D.P.H. He graduated M.D.St. Andrews in 1895. He was for a time M.O.H. for the Burgh of Dunbar, and for many years held the appointment of medical superintendent of Haddington District Asylum, besides conducting a large private practice. For upwards of thirty years he served in the 8th Battalion of the Royal Scots, attaining the rank of honorary surgeon-colonel, receiving the Volunteer Decoration for long service. Dr. Ronaldson contributed to the JOURNAL (vol. ii, 1907, p. 1826) a report of the death of a gamekeeper from a single pellet wound. The pellet had passed through the conjunctiva on the nasal side of the eyeball, splintered the orbital plate of the ethmoid, traversed the left cavernous sinus, divided the internal

carotid artery, run along the substance of the pons, and lodged between the lobes of the cerebellum. Dr. Ronaldson was held in high esteem alike among his friends and in professional circles. He leaves a widow and a son—a member of his father's profession, at present on war service.

DR. CHARLES CHAPMAN SKARDON died at his residence in Audley, North Staffs, on May 14th, aged 62. He was a native of Plymouth, and after studying at the medical schools of St. Bartholomew's and St. Mary's he took the diploma of L.S.A. in 1883. He settled in practice at Evershot, Dorset, and later in London. For the last six years he practised in Audley, Staffs, where he was highly esteemed by his patients.

DR. JAMES ANDERSON of Poulton-le-Fylde, Lancashire, died on April 9th, aged 64, of acute pneumonia. He was born in Johnston, Renfrewshire, and took the degree of M.B.Glasg. and the diploma of L.R.C.S.Edin. in 1877. After holding the appointment of resident surgeon to the Paisley Infirmary he went into practice in Poulton-le-Fylde, where he remained for thirty-eight years. In April, 1901, he was appointed a member of the Poulton Urban District Council, resigning his seat in 1902, when he was elected medical officer of health, an appointment which he held till his decease. He was also medical officer for the Poulton district of the Fylde Union.

DR. BARTHOLOMEW EDWIN MCKENZIE, of Toronto, who died on April 21st, was one of the first Canadian surgeons to devote himself to the study of orthopaedics. He was born at Oak Ridges, Ontario, in 1851, and was educated at the Cobourg Collegiate Institute. In 1877 he graduated at Victoria University and was awarded the silver medal for mathematics. He then entered the medical school of McGill University and received the degrees of M.D., C.M. in 1880. He subsequently did post-graduate work in London, Glasgow, Berlin, and Vienna. After engaging for a few years in general practice in Toronto, he specialized in orthopaedics. He was the founder of the Orthopaedic Hospital and was actively connected with its work almost up to the day of his death. In 1905 he was elected president of the American Orthopaedic Association. He was also associate professor of clinical surgery at the Medical College for Women, Toronto. Dr. McKenzie was a strong advocate for temperance and believed in advanced temperance legislation. He was the opponent of Dr. Pyne at the last provincial elections, but was defeated on the "banish-the-bar" issue.

COLONEL WILLIAM LITCHFIELD CHESTER, Army Medica Staff (retired), died at Coney Green, Upper Hatherley, Cheltenham, on May 5th, aged 65. He was born on February 17th, 1851, and educated at Trinity College, Dublin, where he graduated B.A. in 1872 and M.B. and M.Ch. in 1874. Entering the army as surgeon on March 31st, 1875, he became surgeon-major on March 31st, 1887, surgeon-lieutenant-colonel on March 31st, 1895, and full colonel on August 19th, 1903, retiring on February 17th, 1906. He served in South Africa in 1881 in the first Boer war, taking part in the campaign in the Transvaal, and in the Sudan in 1884–85, in the Nile campaign, receiving the medal with a clasp and also the Khedive's bronze star.

DEATHS IN THE PROFESSION ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Dr. Henry L. Elsner, professor of medicine in the University of Syracuse, New York, aged 60; Dr. Giuseppe Magini, professor of histology and general physiology in the University of Rome, aged 64; Dr. R. H. Whitehead, professor of anatomy and dean of the medical department of the University of Virginia, Charlottesville, one of the leading anatomists in the United States, author of *The Anatomy of the Brain* and of many contributions to anatomical literature, aged 50; and Dr. Elphége Hamelin, sometime professor of therapeutics in the University of Montpellier, aged 75.

AN anonymous donor has offered the sum of £100,000 towards the establishment of a psychopathic hospital in New York.

Medical News.

THE Cavendish Lecture before the London Medico-Chirurgical Society will be delivered by Sir John Bland-Sutton, F.R.C.S., at the West London Hospital on Friday, June 23rd.

THE Royal Dental Hospital, Leicester Square, has received a donation of £400 from the trustees of Smith's (Kensington Estate) Charity and £100 from the executors of the late Mr. William Johnston.

DR. THOMAS LEWIS (London) requests us to state that he has retired from practice.

IN accordance with the will of Professor J. William White, of Philadelphia, an obituary notice of whom appeared in the BRITISH MEDICAL JOURNAL of May 20th, his brain has been placed in the Wistar Institute of Anatomy of the University of Pennsylvania, where it will be kept in the laboratory for scientific study.

THE London Committee of the French Red Cross (9, Knightsbridge, S.W.) has arranged for another course of first aid lectures in French at the French Hospital, Shaftesbury Avenue. It is thought that ladies who hope to work in France will be glad to take advantage of this opportunity.

THE Henry Saxon Snell prize of the Royal Sanitary Institute for 1915 has been awarded to Dr. William Hanna, assistant port medical officer, Liverpool, for his essay on improvements in the sanitary arrangements and appliances suitable on board ship for passengers and crew, and cattle and other live stock respectively. The prize consists of a purse of 50 guineas and the silver medal of the institute.

THE New York State Legislature has passed a bill providing for the training, registration, and licensing as dental hygienists of women who have gone through a course of study at a properly equipped dental dispensary. The new law has been made in view of the bad condition of the teeth of school children in New York, at least 90 per cent. of whom, it is said, need treatment. The dental hygienists may be employed by public institutions and school authorities, and may remove lime deposits, accretions, and stains, but they will not be allowed to perform any other operation on the teeth or tissues of the mouth. Similar enactments are already in force in Massachusetts and Connecticut.

THE President of the Royal Meteorological Society announces that, in accordance with the provisions of the Summer Time Act, Greenwich mean time will continue to be used for all meteorological observations and publications, so as to avoid discontinuity. In addition, however, to the work of regular observers, observations of many meteorological phenomena, often of much interest and importance, are recorded or reported by others. The society asks that any person making such reports will be careful to specify whether the time given is Greenwich mean time or summer time, as the omission of this information may render records valueless.

AT a meeting of the Paris Académie de Médecine, on May 9th, Dr. Tarassevitch presented a report on anti-typhoid vaccination in the Russian army. The union of zemstvos and cities, impressed by the results of this method in Great Britain and France, recommended its adoption, and millions of men have been inoculated. Down to February, 1916, more than 20,000 litres of vaccine had been used. Reports received since then from all parts of the front showed a considerable reduction in typhoid mortality. It has been decided to extend the use of the protective measure to paratyphoid affections and to cholera. About 500,000 soldiers have already been protected against the latter disease, although the method has not yet received official sanction.

THE eighth annual meeting of the Society for the Propagation of the Gospel Medical Missions was held at the Church House, Westminster, on May 10th, the chair was taken by Mrs. Scharlieb, M.D., M.S., who in some opening remarks said that only five per cent. of the population of India received proper medical attendance, and it would be a blot upon the fair fame of our country if means were not taken to relieve their suffering. Dr. Hugh Weir, late of Corea, now secretary of the S.P.G. Medical Missions, said that three doctors and six nursing sisters had taken service with H.M. Forces, and practically all the candidates who would naturally have been ready to sail were similarly occupied. In India the responsibility for the medical work connected with the Cambridge mission to Delhi had been transferred to the S.P.G., the Cambridge Committee contributing to the cost.

Letters, Notes, and Answers.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

INCOME TAX.

TAXPAYER, a practitioner at A., started a practice at B. in 1912. In 1912 and 1913 this new branch showed a loss, in 1914 it just paid expenses, and in 1915 yielded a profit of £1,000. He has now sold the original practice, and is devoting his whole time to work at B. In the past his income tax returns have been prepared by amalgamating the results at B. with those for his original practice. How should the return be prepared for 1916–17?

*** On the average of the profits and losses at B. for the three years 1913, 1914, and 1915, as Taxpayer suggests; the average adheres to the business or practice rather than to the individual proprietor. In the same way, the purchaser of the practice at A. is liable on the average profit there, excluding any reference to the past losses at B., even though they were formerly properly included by our correspondent. We may perhaps add that the authorities may require Taxpayer to prepare his statement on the basis of the value of the total *bookings* at B., on the ground that as the practice there is in effect a new one, the cash receipts fall short of the full income accruing. It should also be borne in mind that any special expenses incurred in starting a branch—for example, cost of fittings, furniture, legal expenses in connexion with leasing new premises, etc.—are of a capital nature, and are therefore inadmissible as professional expenses for income tax purposes.

SIGNING CERTIFICATES.

E. K. wishes to know if other practitioners have had a like experience to his own in signing certificates for young working men who have met with an accident in their work and want compensation. Such certificates, he writes, often contain questions which, it is stated, these young men are to answer in writing themselves. Some of the questions are so simple that no one could fail to understand them, being mere inquiries as to name, residence, age, occupation, and so forth; yet when these certificates are presented to me to be signed I find that not one of the questions have been answered. If I point this out, one young man will say that if I don't write the answers for him he must get a clerk in an office to do this for him and another his father. These young men must have had an elementary school education somewhere. Surely, it must be, not because they *cannot* write, but because they *won't* write if they can find somebody more proficient in wielding a pen to write for them! Is this so?

LETTERS, NOTES, ETC.

DYSENTERIC ARTHRITIS.

DR. S. K. CHAUDHURI (Lovett Hospital, Ramnagar, Benares State) writes with reference to Captain Moorhead's note on dysenteric arthritis (April 1st, p. 483): I have to record my personal experience. I had a virulent attack of dysentery in March, 1913. It was diagnosed as amoebic by Lieutenant-Colonel H. B. Melville, I.M.S., and Dr. B. N. Mukerje, honorary physician, King Edward VII Hospital, Benares. This was confirmed by the fact that it was brought under control after nearly a dozen injections of emetine hydrochloride had been made, other remedies having failed. During my convalescence in the third week the metatarso-phalangeal joint of my right big toe became swollen and painful. The onset was quite sudden. I thought the condition to be an acute attack of gout, especially as it is in my family. A course of aspirin, hot fomentations and local antiphlogistic remedies, cleared it up in less than a week. Further injections of emetine hydrochloride were not made for the purpose. I must mention that I have not had a similar trouble in my joint since then. It did not strike me as a sequel peculiar to dysentery. I cannot recollect coming across any such complication in hospital or private practice.

QUININE AND MALARIA.

DR. JAMES DUNBAR-BRUNTON (Cairo, Egypt) writes: Many times in the course of tropical practice I have been grievously disappointed with the results of quinine treatment administered orally. When the already enfeebled stomach of a sufferer from malaria is still further deranged by quinine in powder thrown into it, and is expected to put forth acid from its glands to dissolve the drug, this is surely to expect too much. A few grains may be absorbed, and the remainder passed through the pylorus interned in mucus and inert to fight. To enlarge the dose is equally unsound treatment. It is better to give frequently a small dose dissolved in weak acid. In 1891 I introduced the use of quinine in suppositories, finding an easy way via the rectal mucous membrane of giving a relatively large dose without upsetting the stomach. But undoubtedly the best way is by the intramuscular injection of quinine bichloride. I have read that it may produce abscesses. Such I have never seen in a long course of many injections. The essential part is to heat the ampoule of the solution over a flame till over blood heat. This is taken into a sterilized all-glass syringe with a long needle, also flame-sterilized. The skin is washed with ether. The injections are given deeply into the gluteal muscles, and no pain is felt afterwards, or alternatively under the shoulder blades between the muscles. The number of injections depends on the amount of malarial infection. With such administration of quinine cures will be effected, and in all cases it gives better results than by intravenous injection. Possibly in the veins the quinine is carried too rapidly to the portal circulation, and possibly made inert. Intramuscularly the absorption goes on more slowly.

HEREDITY.

MR. CASPER L. REDFIELD, of Chicago, has offered the American Genetic Association £200 for evidence as to the transmission of acquired characters. He will pay £40 for evidence that any one of the two or three thousand intellectual men or women of history is the product of an ancestry representing on the average four generations to a century; and £40 for evidence that any one of the two or three hundred intellectually very great men or women of history is the product of an ancestry representing on the average three generations to a century. He will pay £40 for a case "from live stock breeding where the parents made acquirements below the standard, in respect to performance and the offsprings surpassed the parents," and for a case in which "decline in powers of the offspring failed to follow acquirements, in the parents, which were clearly and distinctly below the standard of performance of the breed." He will pay £40 if it can be shown for any group of animals that the amount of improvement or decline in animal powers was not, as nearly as can be determined by actual measurements, exactly proportional to the amount of acquirement by ancestors above or below the normal or standard. Further information as to the method of procedure in these investigations may be obtained on application to the Editor of the *Journal of Heredity*, Washington, D.C., U.S.A., or to Dr. Redfield, Monadnock Block, Chicago, Ill.

LIGHT BEERS.

LIEUTENANT-COLONEL RUSHTON PARKER, R.A.M.C.(T.) (Professor of Surgery in the University of Liverpool), writes: Ever since I first tasted French beer I have had agreeable recollections of the "bock," dating from a stay of two months in Paris in 1870. But at my last visit in 1914 it seemed to me that there was uniformity in the light, palatable, and cheap beer met with in Paris and at inns and wayside "cafés," as well as in private houses. This beer is to be procured in bottles, closed by a stopper of porcelain and rubber, clamped on with a stout wire grip, easily released or instantly closed again, exactly as we have in this country, each bottle costing a very few pence, and fit for use over and over again. No doubt this beer has resulted from the labours of Pasteur in standardizing the ferment so as to secure an invariable product, possibly controlled by the State. It is greatly to be desired that a similar light, palatable, and cheap beer of uniform quality should be procurable in this country, as it is in France, by all classes of the community whose condition permits the use of such refreshment to quench thirst. The stronger ales hardly quench thirst, but in fact rather tend to promote it.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	5	0
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A whole column	3	10	0
A page	10	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.